DOCUMENT RESUME

ED 053 942 SE 012 137

AUTHOR	Biggar, Ronald S., Jr.; And Others
TITLE	Scientific Activities of Nonprofit Institutions 1966.
INSTITUTION	National Science Foundation, Washington, D.C.
REPORT NO	NSF-69-16
PUB DATE	Mar 69
NOTE	88p.; Surveys of Science Resource Series
AVAILABLE FROM	Superintendent of Documents, Government Printing Office, Washington, D.C. 20402
EDRS PRICE	EDRS Price MF-$0.65 HC-$3.29
DESCRIPTORS	*Expenditures, Federal Aid, Manpower Utilization, *National Surveys, *Research and Development Centers, *Science Programs, *Voluntary Agencies

ABSTRACT

This report summarizes the results of the National Science Foundation's survey of scientific activities of independent nonprofit organizations in 1966. Information is included on expenditures for research, development, and scientific and technical information activities and on the employment of scientific personnel associated with these activities. Major findings include the following: (1) In January 1967, the full-time-equivalent (FTE) number of R & D scientists and engineers employed by independent nonprofit institutions totaled 24,300, compared with 5,300 in January 1954; (2) Federal expenditures for research and development contracted to nonprofit institutions reached $540 million in 1966, nine times the $60 million reported for 1953; and (3) In 1966, nonprofit institutions with $1 million or more in R & D performance accounted for 83% of total nonprofit R & D expenditures, received 88% of Federal expenditures for R & D projects contracted to nonprofit institutions, and employed 80% of the FTE number of R & D scientists and engineers. Appendices include statistical tables, technical notes, and the questionnaires including the cover letter and instructions. (Author/PR)

ED0 53942

SCIENTIFIC ACTIVITIES
of
NONPROFIT INSTITUTIONS
1966

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
OFFICE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

Surveys of Science Resources Series

NATIONAL SCIENCE FOUNDATION

NSF 69-16

SE 012 137

NOTES AND DEFINITIONS

- *Independent nonprofit institutions*, as defined for this survey, are legal entities organized or chartered to serve the public interest that are exempt from Federal income taxes. Surveyed organizations include independent research institutes, Federally Funded Research and Development Centers (FFRDC's) administered by nonprofit institutions, science exhibitors, professional or technical societies, academies of science, and private philanthropic foundations. Educational institutions and Federal, State, and local governments are excluded from this report.

- *Total expenditures for research and development* include all direct and indirect operating costs incurred in support of research and development, here classified in three major types:
  - (a) Current operating expenditures for research and development conducted intramurally by institutions' own staffs.
  - (b) Capital expenditures for intramural research and development such as expenditures for buildings, facilities, and capital equipment.
  - (c) Extramural expenditures for research and development conducted by other institutions.

- *Expenditures for scientific and technical information activities* are expenditures for the planning, support, control, performance, and improvement of functions or tasks that deal with the processing, handling, and communication of scientific and technical information.

- *Expenditures for education in the sciences* include expenditures for the conduct and support of educational programs related to the sciences and engineering.

- For detailed definitions and specific applications, see instructions and composite questionnaires in appendix C.

Throughout this report, numbers and percents may not add to totals because of rounding. In all text tabulations, figures are rounded to the nearest 10.

SCIENTIFIC ACTIVITIES of NONPROFIT INSTITUTIONS 1966

1966 Expenditures and January 1967 Manpower

Surveys of Science Resources Series

NATIONAL SCIENCE FOUNDATION

NSF 69-16

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C., 20402—Price $1

FOREWORD

THIS REPORT summarizes the results of the National Science Foundation's survey of scientific activities of independent nonprofit organizations in 1966. The study includes data on the financial and manpower resources used by such organizations to carry out research and educational programs in the sciences and engineering. It is comparable in scope to the NSF-conducted survey of nonprofit organizations covering the year 1964.

Independent nonprofit organizations, which constitute a rather heterogeneous group with widely differing programs in the sciences and engineering, perform a variety of functions that contribute to the scientific and technological capabilities of the Nation. The research institutes and the Federally Funded Research and Development Centers administered by nonprofit institutions are principally engaged in R&D performance financed largely through contracts with government agencies and industrial firms. Philanthropic foundations support scientific research and educational activities in universities and colleges and other nonprofit organizations. Another major category of science-oriented nonprofit organizations includes professional societies and academies of science, which are primarily engaged in information activities to encourage scientific advancement within their membership and throughout the scientific community.

This report on the 1966 survey was prepared in the National Science Foundation's Office of Economic and Manpower Studies, H. E. Riley, Head. The National Science Foundation gratefully acknowledges the cooperation of officials of independent nonprofit organizations who supplied the survey data.

CHARLES E. FALK
Planning Director
National Science Foundation

MARCH 1969

Acknowledgments

This report describes the results of a survey carried out in the Office of Economic and Manpower Studies. William L. Stewart was responsible for planning and directing the survey in its initial stages. Ronald S. Biggar, Jr., assisted by Lester Friedman and Penny D. Foster, prepared this report under the supervision of Joseph H. Schuster, Study Director, Universities and Nonprofit Institutions Studies Group. Guidance and review in the preparation of the report were provided by Kenneth Sanow, Head, Statistical Surveys and Reports Section.

CONTENTS

Page

SUMMARY vii

1. INTRODUCTION 1
    Scope of Survey 2
    Relationship to Earlier Surveys 2
    Limitations of Data 3
    Plan of the Report 4

2. GENERAL CHARACTERISTICS OF THE SCIENTIFIC ACTIVITIES OF INDEPENDENT NONPROFIT INSTITUTIONS 5
    Trends in R&D Employment and Expenditures 5
    Employment of Scientists and Engineers 5
    Employment of Technicians 7
    Total R&D Expenditures 7
    Intramural R&D Performance 8
    Capital R&D Expenditures 10
    Extramural R&D Financing 11
    Medical and Health-Related Research and Development 11

3. RESEARCH INSTITUTES 12
    Manpower Characteristics 12
    Total R&D Expenditures 13
    Intramural R&D Performance 14
    Capital R&D Expenditures 15
    Extramural R&D Financing 15

4. FEDERALLY FUNDED RESEARCH AND DEVELOPMENT CENTERS (ADMINISTERED BY NONPROFIT INSTITUTIONS) 17
    Manpower Characteristics 17
    R&D Expenditures 18

5. SOCIETIES AND ACADEMIES OF SCIENCE 20
    Manpower Characteristics 20
    Total Expenditures for Scientific Activities 21
    R&D Expenditures 21
    Scientific and Technical Information 22

6. PRIVATE PHILANTHROPIC FOUNDATIONS 24
    Manpower Characteristics 24
    Total Research Expenditures 24
    Research Expenditures of Foundations With the Largest Research Programs 25
    Current Research Expenditures, by Field of Science 26
    Expenditures for Education in the Sciences 27
    Total Nonscience Expenditures 27

Page
7. SCIENCE EXHIBITORS AND OTHER NONPROFIT INSTITUTIONS ---- 28
  Science Exhibitors ---- 28
    Manpower Characteristics ---- 28
    Total R&D Expenditures ---- 29
    Intramural R&D Performance ---- 30
  Other Nonprofit Institutions ---- 30
    Manpower Characteristics ---- 30
    Total R&D Expenditures ---- 31
    Intramural R&D Performance ---- 31

APPENDIXES:
  A. Statistical Tables ---- 35
  B. Technical Notes ---- 52
  C. Covering Letter, Questionnaires, and Instructions ---- 54

Text Tables

TABLE
Page
1. Concentration of current total and Federal intramural R&D expenditures among independent nonprofit institutions with the largest R&D programs, 1966 ---- 9
2. Total R&D expenditures of research institutes, by R&D expenditure size-class and type of expenditure, 1966 ---- 14
3. Current expenditures for intramural R&D performance of research institutes, by field of science, 1964 and 1966 ---- 14
4. Expenditures for extramural R&D performance of research institutes, by recipient, 1964 and 1966 ---- 16
5. Expenditures of private philanthropic foundations, by asset size-class and type of expenditure, 1964 and 1966 ---- 25
6. Total R&D expenditures of science exhibitors, by type of expenditure, 1964 and 1966 ---- 29
7. Total and FTE number of scientists and engineers employed by other nonprofit organizations, by occupational group and function, January 1967 ---- 30
8. Total R&D expenditures of other nonprofit organizations, by type of expenditure, 1966 ---- 32

Charts

CHARTS
Page
1. Trends in R&D employment and expenditures (by source) of nonprofit institutions ---- 6
2. Types of R&D expenditures of independent nonprofit institutions, 1966 ---- 8
3. Geographic distribution of current expenditures for intramural R&D performance of independent nonprofit institutions, 1966 ---- 10
4. Percent distribution of R&D scientists and engineers (FTE) in research institutes, by occupational group and highest earned degree, January 1967 ---- 13
5. Distribution of total R&D expenditures of research institutes, by type of expenditure, 1966 ---- 13
6. Distribution of R&D scientists and engineers (FTE) in Federally Funded Research and Development Centers, by occupational group and highest earned degree, January 1967 ---- 18
7. Distribution of research expenditures among selected groups of private philanthropic foundations ranked from highest to lowest in terms of total research expenditures, 1966 ---- 26
8. Total program expenditures of private philanthropic foundations, by major area of support, 1966 ---- 27

SUMMARY

- In January 1967, the full-time-equivalent (FTE) number of R&D scientists and engineers employed by independent nonprofit institutions totaled 24,300, compared with 5,300 in January 1954. This represented an annual compound rate of increase of 12.4 percent per year between 1954 and 1967.

- Current expenditures for R&D performance in independent nonprofit institutions amounted to $800 million in 1966, about 7 times the $110 million in 1953.

- Federal expenditures for research and development contracted to nonprofit institutions reached $540 million in 1966, nine times the $60 million reported for 1953. As a percent of total, Federal R&D support increased from 55 percent in 1953 to 68 percent in 1966.

- In 1966, nonprofit institutions with $1 million or more in R&D performance accounted for 83 percent of total nonprofit R&D expenditures, received 88 percent of Federal expenditures for R&D projects contracted to nonprofit institutions, and employed 80 percent of the FTE number of R&D scientists and engineers.

- Organizations and individuals outside the nonprofit sector received $81 million for R&D performance from independent nonprofit institutions in 1966. Of this total, universities and colleges and their affiliated hospitals received $53 million, or 65 percent.

1. Introduction

Since World War II, industry and Federal Government contracts for research have stimulated a considerable growth in both the number of independent nonprofit research organizations and the range of their R&D activities. In serving the advanced technological needs of industry and government, these research organizations vary greatly in their financial sources, structures, the extent of their affiliations with other organizations, and the diversity of their programs. The dollar magnitudes of their R&D programs range from less than $50,000 to more than $75 million. Some are concerned with research activities spanning virtually all the natural and social sciences.

The scientific contributions of many nonprofit institutions have had a stimulating effect on the civilian economy. For example, the Mellon Institute played a key role in the development of synthetic rubber. The Battelle Memorial Institute was largely responsible for the development of electrostatic copying. Similarly, magnetic tape recording, the hypersonic shock tunnel, and printed magnetic characters for the processing of financial and other records were among the many scientific contributions that resulted from research performed at the IIT Research Institute, Cornell Aeronautical Laboratory, and Stanford Research Institute, respectively.

Independent nonprofit research organizations perform important services for Federal and State agencies as well as for private industry by providing technological advice and performing research on specific problems. The independent character of these research organizations has had a significant effect on the growth and diversification of their research operations. By being independent, these organizations are not necessarily committed to or oriented toward the problems of any one company or government agency. Their independence also means that they are free to establish their own objectives and employ researchers and managerial personnel at existing market rates. This flexibility enables them to acquire the managerial and technical know-how necessary to attract research contracts from both public and private organizations.

The nonprofit sector's participation in the advancement of the Nation's science capabilities goes well beyond the performance of research and development. Science is further advanced by the dissemination of the knowledge acquired in the laboratory to other members of the scientific community. Professional or technical societies expend millions of dollars annually on the publication and distribution of scientific and technical information, the sponsorship of symposia, and the performance of other services to help insure the widest possible distribution of research findings.

Private philanthropic foundations have also advanced the Nation's scientific capacity by channeling financial support to institutions or talented individuals wishing to undertake experimental programs. Foundations, in effect, make research funds available to creative management in conventional institutions that rarely have funds for innovation. Foundations have produced a record of significant achievement in the areas of scientific research and science education because of their ability to make strategic allocations of their funds. Perhaps, the most important role of foundation philanthropy is to serve as a catalyst to stimulate public and private support for the solution of social problems.

Another group of nonprofit institutions is referred to in this report as "science exhibitors"

—science museums, zoological parks, botanical gardens, and arboretums. The capabilities of these institutions go well beyond the performance of research and development, as they also increase the science literacy of their respective communities by providing exhibits that display and interpret recent scientific findings. Many of these organizations maintain educational programs that are closely integrated with the curriculums of local educational institutions.

Scope of Survey

This survey was conducted by the National Science Foundation, using mail questionnaires, to obtain information on the scientific activities of independent nonprofit organizations in the United States. Questionnaires were sent to all research institutes, Federally Funded Research and Development Centers (FFRDC's) administered by nonprofit organizations, science exhibitors, and "other" nonprofit organizations known or believed to have science activities. Also included in the canvass were all philanthropic foundations with assets of $1 million or more, plus all others that were known to have significant science programs. Societies and academies of science with total expenditures of less than $50,000 were excluded from the canvass. The data include estimates for organizations not surveyed based on previous studies and secondary information.[1] The principal types of nonprofit organizations not covered in the survey are nonprofit hospitals and health agencies, which were surveyed by the National Institutes of Health. Further information regarding survey coverage and response is contained in appendix B, *Technical Notes.*

To obtain information on the diverse activities of the surveyed institutions, the institutions were separated into three broad categories, each receiving a different version of the questionnaire. (See composite questionnaires in appendix C.) Each of the three types of questionnaires was designed to obtain detailed information on the primary type of scientific activity sponsored or performed. The first category consisted of those institutions that generally conduct research and development themselves (performer)—independent nonprofit research institutes and operating foundations, FFRDC's administered by nonprofit institutions, science exhibitors, and "other" nonprofit organizations.[2] The second category included professional or technical societies and academies of science that either supported research or development or financed scientific and technical information activities.[3] In the third category were private philanthropic foundations that supported scientific activities at other organizations.

Relationship to Earlier Surveys

The 1966 survey was about the same in scope and coverage as the 1964 survey of the scientific activities of nonprofit organizations.[4] Coverage was much more limited in the earlier NSF-sponsored surveys of selected groups of nonprofit organizations in 1953[5] and 1957[6] and in the 1960 survey of the science activities of private foundations.[7] The principal differences between the 1966 and 1964 surveys are that the present survey collected manpower information on the following activities:

---

[1] See Relationship to Earlier Surveys, page 2.

[2] Here and in subsequent sections of this report independent nonprofit research institutes will be referred to as "research institutes."

[3] Here and in subsequent sections of this report, the term "societies" will include professional and technical societies.

[4] National Science Foundation, *Scientific Activities of Nonprofit Institutions—1964 Expenditures and January 1965 Manpower*. Washington, D. C. 20402: Supt. of Documents, U. S. Government Printing Office, 1967.

[5] The National Science Foundation issued four reports on these 1953 surveys: *Scientific Research Expenditures by the Larger Private Foundations*, prepared for the National Science Foundation by F. Emerson Andrews; *Research by Cooperative Organizations: A Survey of Scientific Research by Trade Associations, Professional and Technical Societies, and Other Cooperative Groups, 1953*, prepared for the National Science Foundation by Battelle Memorial Institute; *Research and Development by Nonprofit Research Institutes and Commercial Laboratories, 1953*, prepared for the National Science Foundation by the Maxwell Research Center, Syracuse University (Washington, D. C. 20402: Supt. of Documents, U.S. Government Printing Office, 1956); and *Research Expenditures of Foundations and Other Nonprofit Institutions, 1953-54* (Washington, D. C. 20550: National Science Foundation, 1957).

[6] National Science Foundation, *Scientific Research and Development of Nonprofit Organizations—Expenditures and Manpower, 1957* (Washington, D. C. 20402: Supt. of Documents, U. S. Government Printing Office, 1961).

[7] National Science Foundation, *Research and Other Activities of Private Foundations, 1960* (Washington, D. C. 20402: Supt. of Documents, U. S. Government Printing Office, 1964).

(1) The full-time-equivalent number of scientists and engineers employed by "performer" organizations, by field of science, highest earned degree, and function.

(2) The total number of scientists and engineers employed by philanthropic foundations, societies, and academies of science, by highest earned degree and function in which primarily employed.

Information emphasizing the primary scientific activity of each respondent includes the following: for "performer" organizations, expenditures for intramural research and development, including medical and health-related expenditures, by source of funds and field of science; for societies and academies of science, expenditures for scientific and technical information; and for private philanthropic foundations, financing of scientific activities, including medical and health-related research and development, and support for education in the sciences. Surveyed nonprofit institutions also provided data on their employment of scientists and engineers classified by field, highest earned degree, and function.

Limitations of Data

The disparate characteristics of nonprofit organizations, the continuing shifts in the composition of the sector, and the lack of a comprehensive mailing list, particularly of those newly formed nonprofit organizations with small-scale or local operations, posed serious survey problems. No single directory or source document lists all nonprofit organizations with scientific activities. The mailing list for the 1966 survey was compiled from previous surveys conducted by the National Science Foundation and from various directories, including the *Research Centers Directory* and *The Foundation Directory*.[8] Some new organizations, as well as a few older organizations that recently initiated scientific and engineering programs, may not have been included in the survey. However, the number of such organizations and the amount of their resources allocated to research and development are believed to be relatively small (less than one percent of national totals for the nonprofit sector).

Variations in accounting procedures and differences in interpreting concepts and definitions rank among the major limitations surrounding surveys of R&D activities of independent nonprofit organizations. The task of selecting and classifying large interdisciplinary R&D activities according to primary fields of science and character of work is becoming increasingly difficult, for the complexities of modern technology require the pooling of resources in various scientific disciplines in the conduct of R&D projects.[9] It should be recognized, therefore, that many of the responses are "best estimates," and may vary somewhat in their accuracy.

The wide variations in the organizational structure and in the degree of autonomy characterizing nonprofit organizations often make it difficult to determine whether a particular organization should be considered "independent" or part of a "parent organization." This situation frequently occurs in the case of research institutes that maintain close working relationships with universities or hospitals. One of the reasons for the classification problem is the gradual process through which some subordinate organizational units acquire sufficient autonomy and status to be considered "independent." On the other hand, some organizations lose their independent status through mergers or consolidations with other organizations. The frequency of shifts in status among nonprofit organizations contributes to the problem of developing and maintaining comparable trend data on the employment and financial characteristics of such organizations.

Perhaps, the most serious limitation of this report is the omission of nonprofit hospitals and health agencies from the survey. However, they are periodically surveyed by the National Institutes of Health, and estimates of their expenditures for R&D performance and of the number of scientists and engineers they employed are included in the overall figures presented in the *Summary* and in section 2. Other sections of this report, though sometimes dealing with medical and health-related data of other types of organizations, do not include data on the scientific activities of nonprofit hospitals and health agencies.

---

[8] See appendix B, *Technical Notes*, footnotes 2 through 6.

[9] The increasing emphasis over the past few years on program-oriented research cutting across many fields of science has added to this difficulty. Interdisciplinary research is becoming more prevalent, and increased attention is being given to the development of reporting procedures that can provide adequate descriptions of such research.

Plan of the Report

The following sections of this report incorporate information on the general manpower and financial characteristics of the scientific activities of nonprofit institutions. Section 2 presents general characteristics of the survey in terms of aggregate totals representing science expenditures and manpower for the nonprofit sector. Sections 3 and 4 cover research and development in research institutes and in FFRDC's administered by nonprofit institutions, respectively. In addition to R&D activities, section 5 presents data on the expenditures of societies and academies of science for the dissemination of scientific and technical information. Data analyzing the philanthropic activities of private foundations that support research or education in the sciences are covered in section 6. Section 7 analyzes data on research and development supported by science exhibitors and "other" nonprofit organizations not previously discussed.

2. General Characteristics of the Scientific Activities of Independent Nonprofit Institutions

Trends in R&D Employment and Expenditures[1]

R&D scientists and engineers, 1954-67. In January 1967, independent nonprofit institutions employed a full-time equivalent of 24,300 R&D scientists and engineers. This was an increase of 4,900 over the number employed in January 1965 and more than four times the 5,300 employed in 1954 (chart 1). This sizable growth in employment reflected the increase in both the number and size of R&D programs carried out by nonprofit institutions.

Current intramural R&D expenditures, 1953–66. Independent nonprofit institutions increased their current operating expenditures for intramural R&D performance from $110 million in 1953 to $800 million in 1966 (chart 1 and appendix table A–1). These amounts represented a 16.5-percent compound annual rate of increase, somewhat higher than the 11.9-percent rate for the Nation's total R&D outlays during the same period. This rapid growth rate was largely the result of sizable annual increases in R&D expenditures by the Federal Government. R&D funds from Federal sources totaled $540 million in 1966, nine times the $60 million reported in 1953. The federally financed portion of total R&D performance in the independent nonprofit sector correspondingly increased from 55 percent in 1953 to 68 percent in 1966.

Expenditures per R&D scientist or engineer. R&D expenditures increased at a somewhat faster rate than the employment of R&D scientists and engineers during 1953–66. As a consequence, R&D expenditures per R&D scientist or engineer increased from $20,800 in 1953 to $32,900 in 1966.[2] The most important factors accounting for this rise probably were increased salaries and wages of professional and supporting staff and the increased costs of equipment and facilities used in R&D performance.

Employment of Scientists and Engineers[3]

Surveyed independent nonprofit institutions employed 22,140 scientists and engineers in January 1967. The employment of such personnel was heavily concentrated in nonprofit organizations whose principal scientific activity was R&D performance. Research institutes and FFRDC's together accounted for more than four-fifths (82 percent) of total employment. The distribution of scientists and engineers by type of organization was as follows:

	Number	*Percent distribution*
Total	22,140	100
Research institutes	12,730	57
FFRDC's	5,500	25
Science exhibitors	600	3
Societies and academies of science	2,060	9
Private philanthropic foundations	470	2
Other nonprofit organizations	790	4

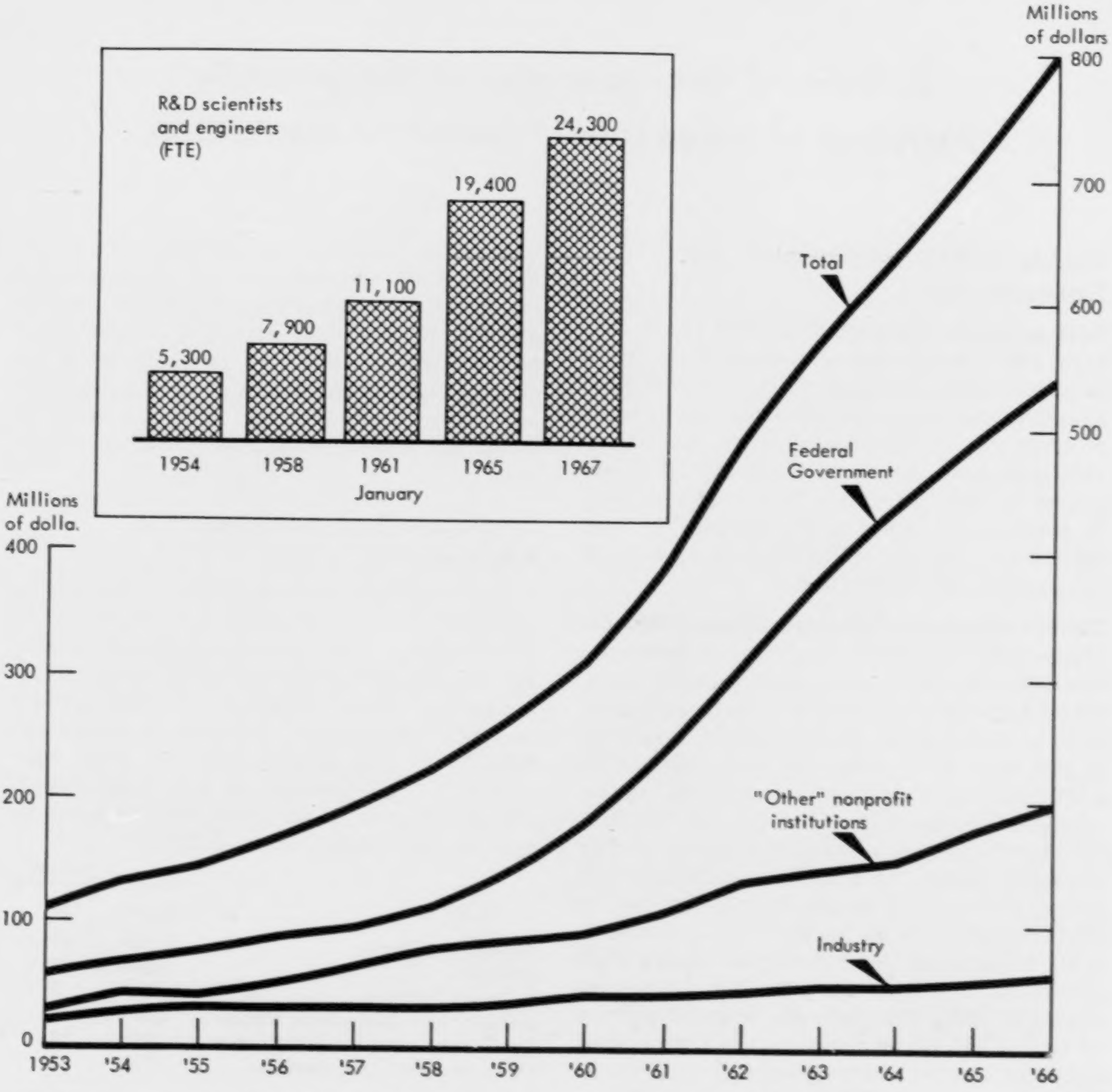
---

[1] Trend data include estimates for nonprofit hospitals and health agencies; subsequent sections of this report exclude the hospitals and health agencies, which were not covered in the survey.

[2] Data on the cost per R&D scientist or engineer for 1953 were based on R&D expenditures of 1953 and the FTE number of R&D scientists and engineers employed in January 1954. The same methodology applies to the later years.

[3] Here and in subsequent sections of this report, personnel data relate only to institutions included in the 1966 survey. As mentioned previously, nonprofit hospitals and health agencies were outside the scope of the survey.

Chart 1. Trends in R&D employment and expenditures (by source) of nonprofit institutions [a]



[a] Includes estimates for nonprofit hospitals and health agencies.
Source: National Science Foundation.

Classification, by highest earned degree. Nearly three-fifths of the scientists and engineers (58 percent) employed in surveyed nonprofit institutions held advanced degrees, including 32 percent with doctorates in the sciences or engineering (including medical degrees). The classification of scientists and engineers employed in January 1967 by highest earned degree was as follows:

	Number	*Percent distribution*
Total	22,140	100
Ph.D. or Sc.D.	5,660	26
M.D., D.D.S., etc.	1,290	6
Master's	5,770	26
Bachelor's or the equivalent	9,420	42

The level of educational attainment of scientists and engineers tended to be relatively high among all types of nonprofit organizations. Of their total number of employees, "other" nonprofit organizations employed the largest ratio of scientists and engineers with doctorates, (including medical degrees) 68 percent. Although FFRDC's employed the lowest proportion of doctorates, 21 percent, they reported the highest proportion of master's degrees, 34 percent. (See appendix table A-2.)

Geographic distribution. In January 1967, the total number of scientists and engineers employed in independent nonprofit institutions was 22,140. This employment was heavily concentrated in the West and Northeast regions of the United States (appendix table A-3). For example, 32 percent were working in the Pacific States and 21 percent in the Middle Atlantic States. These two geographic divisions accounted for over one-half of the total employment of scientists and engineers.

The relatively large number of scientists and engineers employed in the West was principally due to the concentration of employment in California, which accounted for 28 percent of the national total. Similarly, in the Northeast, New York accounted for 14 percent of total employment and Massachusetts, 10 percent. The following tabulation shows a partial breakdown of the national total. The six States specifically named, and the District of Columbia, accounted for three-fourths of the total number of scientists and engineers employed in nonprofit organizations.

	Number	*Percent distribution*
Total	22,140	100
California	6,210	28
New York	3,160	14
Massachusetts	2,110	10
Ohio	1,460	7
District of Columbia	1,360	6
Pennsylvania	1,280	6
Illinois	1,010	5
All other States	5,560	25

Employment of Technicians

The employment of technicians in surveyed nonprofit institutions totaled 7,400 in January 1967 (appendix table A-4).[4] Of this total, 6,620 were assisting in the conduct of R&D programs, with 47 percent employed in the engineering and physical sciences. Forty-one percent of the technicians were engaged in research in the life sciences, while technicians in the social and other sciences accounted for the remaining 12 percent.

Total R&D Expenditures[5]

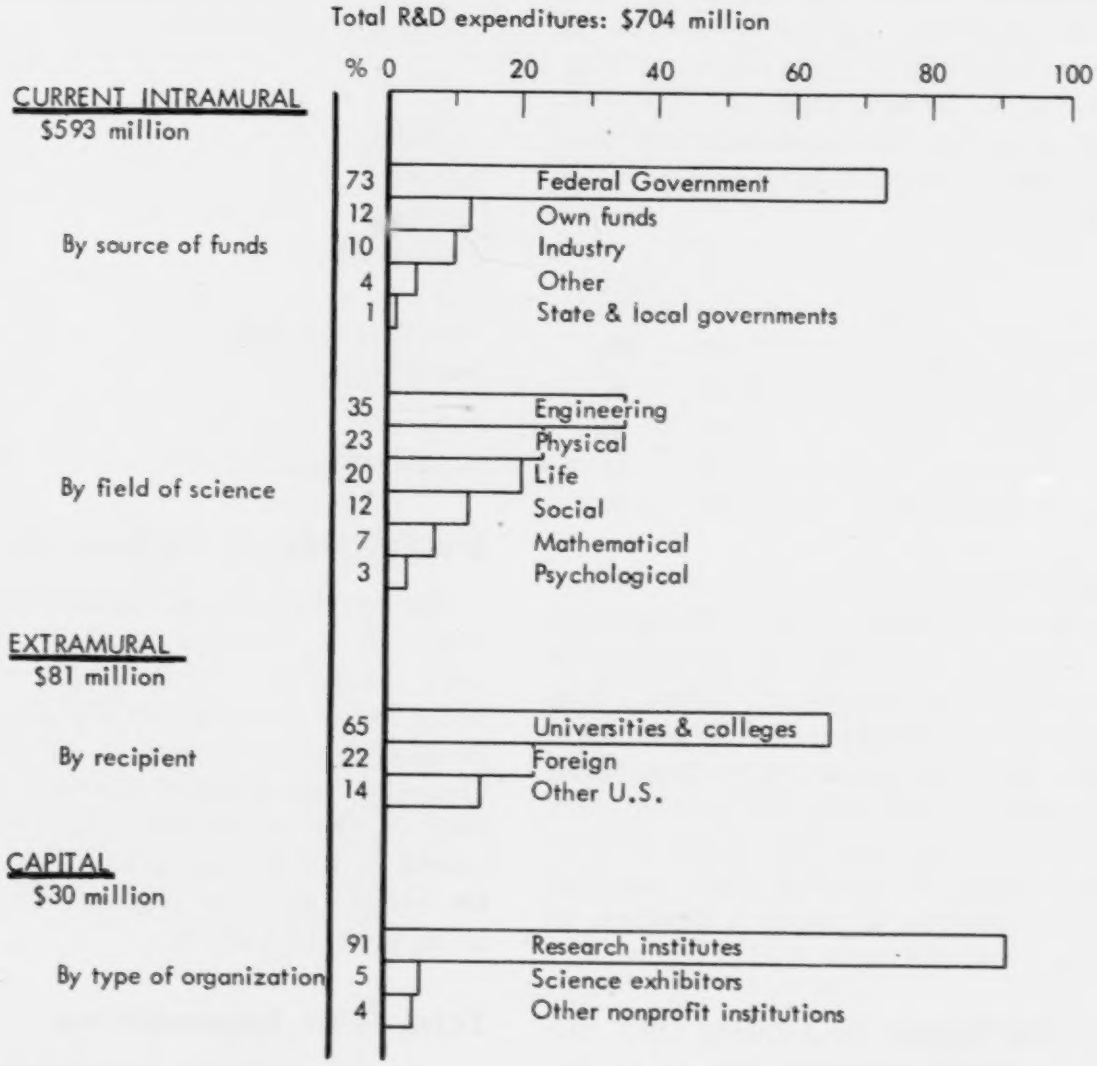
Independent nonprofit institutions included in the survey expended $704 million for scientific research and development during 1966 (chart 2). More than four-fifths of this amount ($593 million) financed current intramural R&D performance. The remainder was allocated as follows: $81 million for extramural R&D financing and $30 million for capital expenditures connected with intramural R&D performance.

---

[4] Figures on the employment of technicians included here and elsewhere in this report exclude societies and academies of science, and private philanthropic foundation which were not asked to supply data on technician employment in the sciences and engineering. However, the number of such employees is small.

[5] Here and in subsequent sections of this report, expenditures data relate only to institutions included in the 1966 survey. As mentioned previously, nonprofit hospitals and health agencies were outside the scope of the survey.

Chart 2. Types of R&D expenditures of independent nonprofit institutions, 1966



Source: National Science Foundation (appendix tables A-5, A-8, A-12, and appendix C).

Intramural R&D Performance

During 1966 nonprofit organizations expended $593 million for R&D projects performed in their own facilities (appendix table A–5). Research institutes ranked first with 58 percent of the total intramural performance. FFRDC's administered by nonprofit organizations accounted for an additional 36 percent. Intramural R&D programs of societies and academies of science, science exhibitors, private philanthropic foundations, and "other" nonprofit organizations accounted for the remainder—$36 million, or 6 percent.

Intramural R&D performance in the nonprofit sector was highly concentrated among the larger organizations, particularly those utilized extensively by the Federal Government to carry out R&D projects related to the missions of Federal departments and agencies. The eight organizations leading in terms of the largest R&D programs spent one-half ($300 million) of the total R&D performance reported by all nonprofit organizations in 1966 (table 1). The 40 largest organizations accounted for four-fifths ($472 million) of total current intramural R&D expenditures and nearly nine-tenths ($377 million) of the federally financed current intramural research and development performed in the nonprofit sector.

TABLE 1. *Concentration of current total and Federal intramural R&D expenditures among independent nonprofit institutions with the largest R&D programs, 1966*

[Dollar amounts in thousands]

Institutions ranked according to current intramural R&D expenditures	Total		Federal	
	Amount	Cumulative percent distribution	Amount	Cumulative percent distribution
Total, all institutions	$592,532	100.0	$434,654	100.0
First 4	201,342	34.0	173,434	39.9
First 8	300,097	50.6	262,666	60.4
First 12	344,982	58.2	297,418	68.4
First 16	374,491	63.2	318,034	73.2
First 20	397,753	67.1	335,961	77.3
First 40	472,445	79.7	376,924	86.7
First 100	545,178	92.0	413,574	95.2

R&D expenditures in the nonprofit sector were concentrated in the 14 research institutes and 7 FFRDC's that reported more than $5 million in current intramural R&D expenditures in 1966 (appendix table A–6). These institutions represented only 4 percent of the 543 nonprofit organizations performing research and development, yet accounted for two-thirds ($403 million) of the $593 million expended for current intramural R&D performance in the nonprofit sector.

Source of funds. Nearly three-fourths ($435 million) of current intramural expenditures for research and development in 1966 were financed by departments and agencies of the Federal Government (chart 2 and appendix table A–5). An additional $68 million, or 12 percent, came from the performing organizations' own funds. Other sources of support included industrial organizations, private philanthropic foundations, and State and local governments. Of the Federal funds, FFRDC's accounted for $211 million, while research institutes received $212 million. These two groups performed 97 percent of total federally funded current intramural research and development in 1966.

The 6 FFRDC's and 5 research institutes that reported more than $10 million in current intramural R&D expenditures represented only 4 percent of the 274 nonprofit organizations receiving Federal funds, yet accounted for two-thirds ($293 million) of the $435 million expended by the Federal Government for current intramural R&D performance (appendix table A–7).

Field of science. Independent nonprofit organizations allocated 35 percent of their $593 million in current R&D performance for projects in engineering (chart 2 and appendix table A–8). The research and development performed by FFRDC's accounted for $114 million of the $208 million spent on engineering projects. Ranking next in dollar volume were the physical sciences, with $134 million, and the life sciences, with $118 million. The remaining funds supported research and development in the social sciences ($72 million), mathematical sciences ($44 million), and psychological sciences ($17 million).

Institutions with $10 million or more in R&D expenditures concentrated their R&D activities in engineering (54 percent) and the physical sciences (25 percent). Organizations with less than $500,000 in R&D expenditures tended to allocate a higher proportion of their R&D funds (56 percent) to the life sciences, 20 percent to the social sciences, and only 6 percent to engineering. (See appendix table A–9.)

Geographic distribution of R&D expenditures. The Pacific States accounted for 35 percent of the nonprofit sector's current intramural R&D performance, with California alone accounting for 28 percent. Nonprofit performers in the Middle Atlantic area ranked next with 18 percent of the total, followed by institutions in the East North Central States (15 percent), New England States (11 percent), and South Atlantic States (11 percent) (chart 3 and appendix table A–10). More than nine-tenths of all current intramural R&D expenditures were funded by large research organizations located in the 14 States and the District of Columbia leading in terms of R&D performance (appendix table A–11). These research organizations also accounted for 95 percent of federally financed research and development conducted in the nonprofit sector.

Capital R&D Expenditures

Expenditures for new construction and modifications to existing facilities utilized in connection with intramural R&D programs increased from $25 million in 1964 to $30 million in 1966.[6] Research institutes had the lowest capital-to-current R&D expenditures ratio (1:13), although accounting for more than 90 percent of the capital R&D expenditures, as follows:

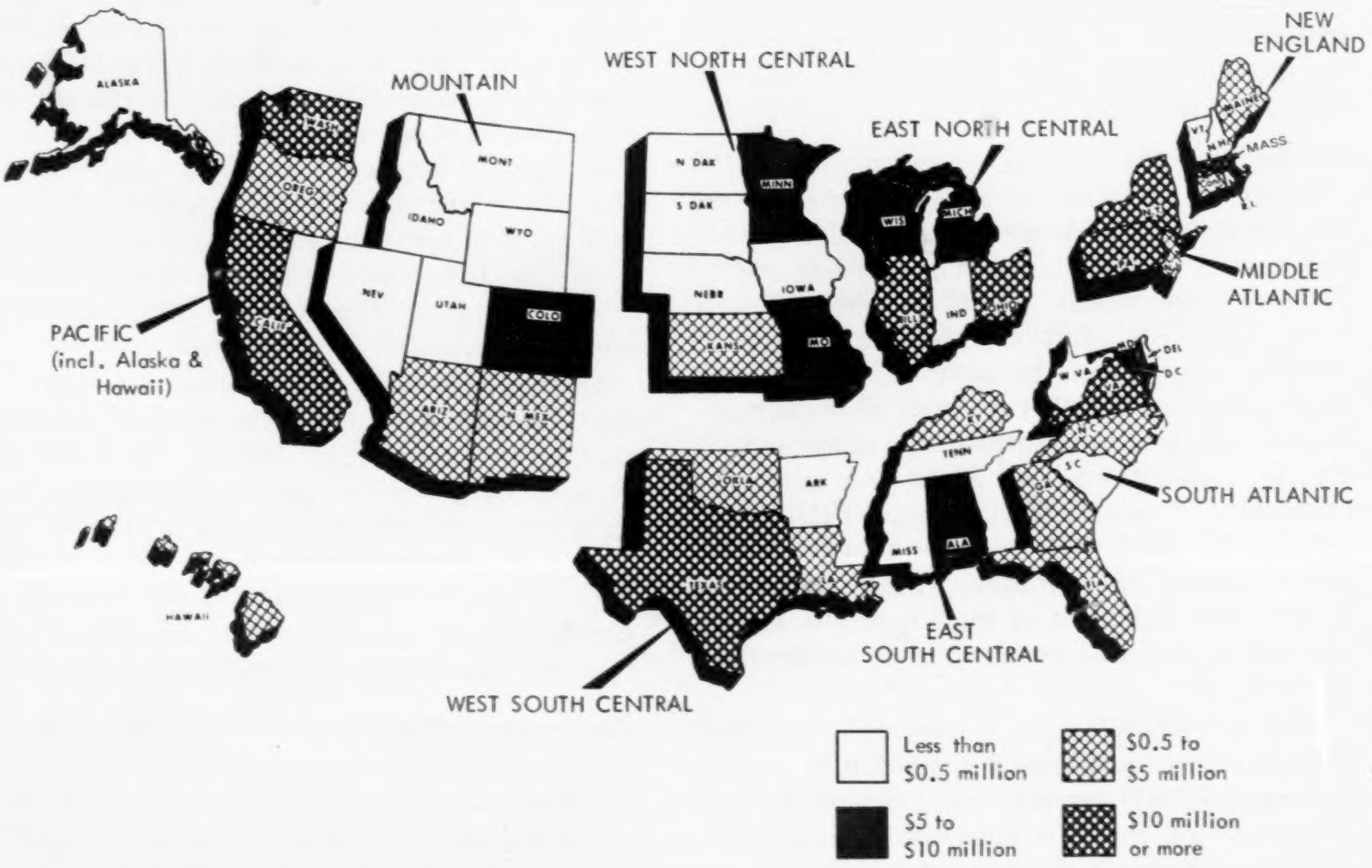
	(Millions of dollars) Capital	*(Millions of dollars)* Current	*Ratio of capital to current*
Total	$30	$360	1:12
Research institutes	27	342	1:13
Science exhibitors	1	8	1:6
Other nonprofit organizations	1	9	1:7

---

[6] Data on intramural capital expenditures for research and development conducted within the nonprofit sector were requested only from organizations classified as "performers." Nonprofit organizations were instructed to exclude any capital expenditures made by owners of property rented or leased by the respondent, including costs of Government-owned structures or equipment. Capital expenditures of FFRDC's are therefore excluded from these totals.

Chart 3. Geographic distribution of current expenditures for intramural R&D performance of independent nonprofit institutions, 1966

Total: $593 million


MOUNTAIN
WEST NORTH CENTRAL
EAST NORTH CENTRAL
NEW ENGLAND
MIDDLE ATLANTIC
PACIFIC (incl. Alaska & Hawaii)
SOUTH ATLANTIC
EAST SOUTH CENTRAL
WEST SOUTH CENTRAL
ALASKA
HAWAII
WASH
OREG
CALIF
MONT
IDAHO
WYO
NEV
UTAH
COLO
ARIZ
N MEX
N DAK
S DAK
MINN
NEBR
IOWA
KANS
MO
WIS
MICH
ILL
IND
OHIO
VT
N H
MAINE
MASS
CONN
R I
N Y
PA
N J
DEL
MD
D C
W VA
VA
N C
S C
GA
FLA
KY
TENN
MISS
ALA
OKLA
ARK
TEXAS
LA
Less than $0.5 million
$0.5 to $5 million
$5 to $10 million
$10 million or more

Source: National Science Foundation.

Extramural R&D Financing

Nonprofit organizations provided $81 million in R&D grants to organizations and individuals outside of their sector, or a little less than 14 percent of their current intramural R&D expenditures. Private philanthropic foundations accounted for 85 percent, or $70 million. Of the $64 million expended for extramural research and development conducted in the United States, $53 million was distributed to universities and colleges and their affiliated hospitals (chart 2 and appendix table A–12). R&D funds to all other U.S. recipients totaled $11 million. Foreign organizations and individuals received $18 million.

Medical and Health-Related Research and Development [7]

Independent nonprofit institutions covered in the survey spent $146 million for current medical and health-related research and development in 1966, over one-fifth of their total current R&D expenditures. Of this amount, $114 million was reported for current intramural R&D performance (appendix table A–13). Expenditures for extramural research and development accounted for an additional $32 million.

Source of funds. More than three-fifths of the $114 million in current intramural expenditures was expended for projects financed by agencies of the Federal Government (appendix table A–14). An additional one-fifth ($22 million) was spent from the nonprofit organizations' own funds. The remaining $19 million came from State and local governments, and other sources, such as industry and private philanthropic foundations.

Field of science. Current intramural research and development in medical and health-related projects encompassed all the major fields of science (appendix table A–15). Expenditures were mainly concentrated in the life sciences, with 83 percent of the total. The physical sciences accounted for 8 percent; and the remaining 9 percent was distributed among the other major fields of science, ranging from $600,000 in the mathematical sciences to over $6 million in the psychological sciences.

---

[7] Data were not collected for societies and academies of science or by field of science for intramural medical and health-related research conducted by private philanthropic foundations.

3. Research Institutes

RESEARCH INSTITUTES accounted for the major share of R&D performance by organizations covered in the survey. For this study, a research institute was defined as a separately incorporated, independent nonprofit organization operating under the direction of its own controlling body whose primary function was the performance of research and development in the natural and social sciences. In 1966, the number of organizations that were known to meet these criteria totaled 215.[1] In addition to the foregoing organizations, this study included 18 operating foundations, which were primarily engaged in R&D performance, in the "research institute" category.

The grouping of research institutes and operating foundations in a single category in this study was prompted by the fact that, as performers of research and development, they share many common characteristics. The principal differentiating feature between the two organizational types is that the R&D activities of research institutes are financed largely through contracts with public and private organizations, while the R&D activities of operating foundations are funded principally through their own endowment funds.

Manpower Characteristics

Scientists and engineers. The 12,730 full-time and part-time scientists and engineers employed by research institutes[2] in January 1967 comprised more than two-fifths of these organizations' total employment (30,580) (appendix table A–16). The FTE number of scientists and engineers was 12,130, with 10,490 (86 percent) performing or administering research and development. Scientists and engineers working in medical and health-related research and development comprised 32 percent of the total R&D professional staff.

The 10,490 FTE number of scientists and engineers performing research and development in January 1967 represented a 17-percent increase from the 8,980 in January 1965. A large part of the increase was attributable to the expansion of research staffs in a few large research institutes. The 24-percent expansion in the combined R&D staffs of Stanford Research Institute, Battelle Memorial Institute, and IIT Research Institute accounted for two-fifths of the increase.

More than one-half (5,570) of the FTE number of R&D scientists and engineers were employed by 14 research institutes with R&D outlays amounting to $5 million or more. One-third (3,280) were employed by 41 organizations with $1 million to $5 million in R&D expenditures. In contrast, the 178 organizations with R&D programs of less than $1 million accounted for only 16 percent (1,640) of the R&D scientists and engineers.

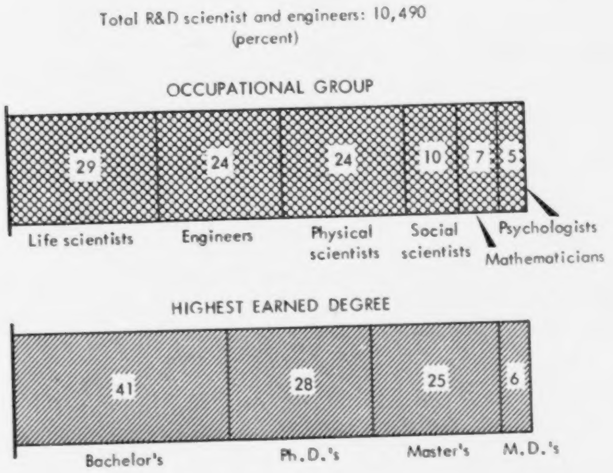
Life scientists constituted 29 percent (3,040) of the FTE number of R&D scientists and engineers employed by these organizations. (See chart 4 and appendix table A–17). Physical scientists and engineers each accounted for 24 percent. In FTE terms, 3,410 scientists and engineers were working on medical and health-related R&D projects in all of the major fields of science, with three-fourths concentrated in the life sciences (2,530). Physical scientists (510), primarily chemists, accounted for 15 percent of the total. Most of the remaining scientists were psychologists.

---

[1] Organizations, in which research is not the primary activity, that otherwise meet the definition of a research institute are included in section 7.

[2] The term "research institutes" includes the 18 operating foundations unless specifically stated otherwise.

Chart 4. Percent distribution of R&D scientists and engineers (FTE) in research institutes, by occupational group and highest earned degree, January 1967



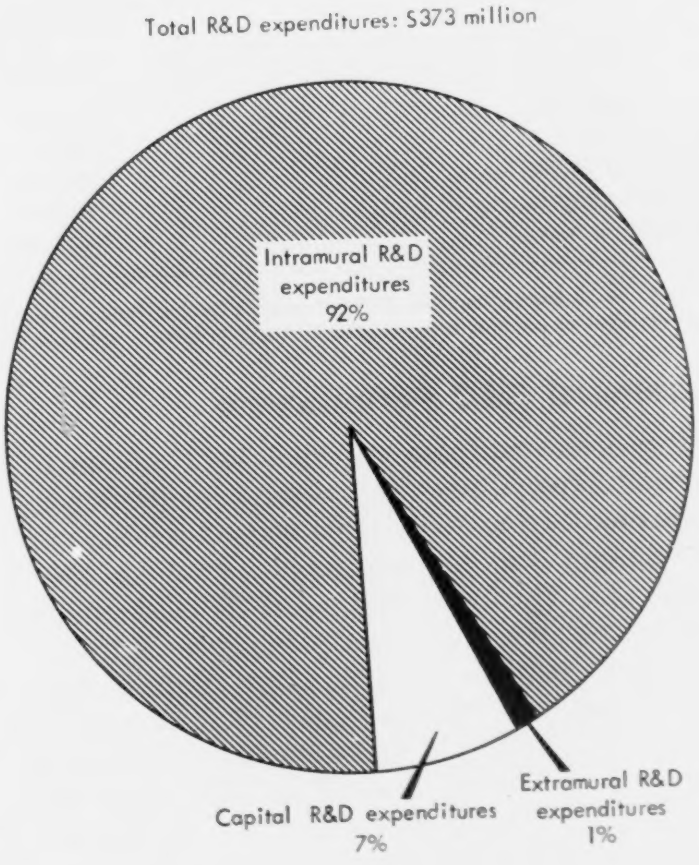
Source: National Science Foundation (appendix table A-17 and appendix C).

Approximately 34 percent of the total FTE number of R&D scientists and engineers employed in research institutes had earned their doctorate degree. Master's degrees accounted for 25 percent of the total. The distribution of scientists and engineers, by highest earned degree, in January 1967 was as follows:

	Total number	*FTE number*	
		Total	*R&D*
Total	12,730	12,130	10,490
Ph.D. or Sc.D.	3,190	3,050	2,950
M.D., D.D.S., etc.	820	650	650
Master's	2,980	2,860	2,610
Bachelor's or the equivalent	5,740	5,570	4,280

Technicians. Research institutes employed 4,940 technicians in January 1967, or 16 percent of the 30,580 people employed by these organizations. Of these technicians, 4,330 (88 percent) assisted in the performance of research and development. One-half (2,130) of the R&D technicians assisted engineering and physical scientists. Life science technicians accounted for two-fifths of the R&D complement. (See composite research institute questionnaire in appendix C.)

Chart 5. Distribution of total R&D expenditures of research institutes, by type of expenditure, 1966



Source: National Science Foundation (table 2).

Total R&D Expenditures

In 1966, R&D expenditures by research institutes totaled $373 million.[3] Ninety-two percent ($342 million) consisted of current expenditures for intramural R&D work (chart 5 and table 2). Capital expenditures associated with intramural R&D projects amounted to $27 million. The remaining expenditures ($3 million) financed research and development carried on by outside organizations.

---

[3] To avoid double counting, $582,000 used to finance research and development in "other" nonprofit institutions was excluded; the amount was reported as current expenditures by the nonprofit institutions performing the research and development.

TABLE 2. *Total R&D expenditures of research institutes, by R&D expenditure size-class and type of expenditure, 1966*

[Thousands of dollars]

R&D expenditure size-class (thousands of dollars)	Total R&D expenditures [a]	Current intramural R&D expenditures	Extramural R&D expenditures [a]	Capital R&D expenditures
Total	$372,966	$342,405	$3,179	$27,382
Less than $500	22,029	19,833	1,081	1,115
$500 to $999	22,618	19,700	1,159	1,759
$1,000 to $4,999	108,971	98,007	939	10,025
$5,000 to $9,999	63,778	59,855	------	3,923
$10,000 or more	155,570	145,010	------	10,560

[a] To avoid double counting $582,000 used to finance research and development in "other" nonprofit institutions was excluded. The amount was reported as current expenditures by the nonprofit institution performing the research and development.

Intramural R&D Performance

Research institutes reported $342 million in current expenditures for intramural R&D performance during 1966. This was an increase of $60 million over the comparable total for 1964 (table 3). The four leading R&D performers among the research institutes were Stanford Research Institute ($51 million), Battelle Memorial Institute ($39 million), IIT Research Institute ($22 million), and Cornell Aeronautical Laboratory ($21 million). Combined, they accounted for nearly two-fifths of all current intramural R&D performance by research institutes in 1966 (appendix table A-18). Nearly one-half of current and capital intramural R&D performance was accomplished by eight organizations. These eight research organizations also accounted for more than two-fifths of the FTE number of R&D scientists and engineers employed.

Medical and health-related R&D performance conducted "in-house" amounted to $98 million in 1966, or 29 percent of total current intramural R&D expenditures of research institutes. Small research institutes were somewhat more heavily engaged in R&D performance in medical and health-related fields in 1966 than were the larger institutes, as indicated in the following table:

(Dollar amounts in thousands)

R&D expenditure size-class	*Total R&D*	*Medical and health-related R&D* *Amount*	*Medical and health-related R&D* *Percent of total R&D*
Total	$342,410	$97,820	29
Less than $500	19,830	11,710	59
$500 to $999	19,700	10,260	52
$1,000 to $4,999	98,010	43,380	44
$5,000 to $9,999	59,860	22,280	37
$10,000 or more	145,010	10,200	7

TABLE 3. *Current expenditures for intramural R&D performance of research institutes, by field of science, 1964 and 1966*

[Dollar amounts in thousands]

Field of science	Total 1964	Total 1966	Net increase, 1964–66	Percent change, 1964–66
Total	$282,373	$342,405	$60,032	21.3
Engineering	77,518	90,890	13,372	17.3
Physical sciences	71,682	85,058	13,376	18.7
Mathematical sciences	15,628	16,513	885	5.7
Life sciences	82,002	92,369	10,367	12.6
Psychological sciences	6,216	10,652	4,436	71.4
Social sciences	29,327	46,923	17,596	60.0

Source of funds. The relative amounts of R&D expenditures of research institutes financed by each of the major sectors of the economy were about the same in 1966 as in 1964, with the largest amount, $212 million, or 62 percent of the total, coming from Federal sources. This Federal support was more than three times the amount provided by any other sector; 47 percent of it was contracted to the four institutions with the largest R&D programs. Contributions from industrial organizations totaled $58 million, or 17 percent of the total. The institutes themselves accounted for $48 million, while State and local governments, and other sources, such as individuals or other nonprofit organizations, contributed the remainder (appendix table A–19).

The bulk of the support for intramural medical and health-related research and development also came from the Federal Government (appendix table A–20). Although the proportion from this source remained at about the same level as in 1964, actual expenditures were $7 million more. Internal resources provided 18 percent. The remainder, 19 percent, came from industry, State and local governments, and other sources.

Field of science. Three scientific disciplines—engineering, life sciences, and physical sciences—together accounted for $268 million, or more than three-fourths of the current intramural R&D expenditures of research institutes during 1966 (appendix table A–21). The emphasis on these three fields is primarily due to the large federally sponsored R&D projects supporting defense, space, and atomic energy programs. The remaining $74 million was expended for R&D performance in the social, mathematical, and psychological sciences.

During the 1964-66 period, R&D expenditures increased by 21 percent (table 3). The social sciences showed the greatest absolute growth ($18 million), but the psychological sciences, starting from a smaller base, had the greatest relative increase (71 percent), reflecting in part the Federal Government's increased support of research in the field of education and on problems associated with urban living. In comparison, the smaller percentage increase in the physical sciences, engineering, and life sciences together accounted for 62 percent of the actual dollar increase in R&D expenditures.

Although current expenditures for intramural medical and health-related R&D projects were recorded in all major fields of science, 83 percent was allocated to the life sciences. Physical sciences ranked next with 9 percent.

Cost per R&D scientist or engineer. The cost per R&D scientist or engineer employed by research institutes averaged $32,700 in 1966 (appendix table A–22). By size class, the lowest cost ratio was $21,600 incurred by the organizations spending less than $500,000 for research and development. The highest cost per R&D scientist, $37,400, was incurred by the largest institutions ($10 million or more in R&D expenditures). The relatively high average cost in research institutes with large R&D expenditures appears to be due to their heavy concentration in R&D programs in engineering and the physical sciences, which frequently require expensive facilities, equipment, and materials and relatively large numbers of supporting personnel.

Capital R&D Expenditures

Research institutes expended $27 million, 7 percent of their total intramural research and development, for the purchase of R&D facilities and equipment in 1966. Organizations with R&D expenditures between $1 and $5 million accounted for 37 percent ($10 million) of the total capital R&D expenditures. In the $10 million or more R&D size-class, capital outlays amounted to 39 percent ($11 million). (See table 2.)

Extramural R&D Financing

Research institutes spent less than $4 million in 1966 to finance research and development conducted by outside organizations and individuals—about one-half as much as in 1964 (table 4). Part of the decrease was attributable to the decline in the number of organizations supporting extramural scientific investigations. Of the total extramural R&D expenditures in

1966, 56 percent went to universities and colleges (including affiliated hospitals). This was a significant increase from the 31-percent share allotted to universities and colleges in 1964. Expenditures by research institutes to finance R&D performance outside the United States increased 18 percent over 1964 to $267,000.

Extramural medical and health-related R&D expenditures decreased from almost $2 million in 1964 to $610,000 in 1966. Of the portion spent within the United States, 67 percent financed research in universities and colleges (including affiliated hospitals) in 1966, as compared with only 20 percent in 1964.

TABLE 4. *Expenditures for extramural R&D performance of research institutes, by recipient, 1964 and 1966*

[Thousands of dollars]

Recipient	1964 [a]		1966	
	Total	Medical and health-related	Total	Medical and health-related
Total	$7,335	$1,744	$3,761	$608
United States	7,109	1,722	3,494	579
Universities and colleges	2,272	352	2,104	390
Other nonprofit organizations	1,873	1,298	582	69
Other recipients	2,964	72	808	120
Foreign	226	22	267	29

[a] Revision of data published in *Scientific Activities of Nonprofit Institutions, 1964.*

4. Federally Funded Research and Development Centers

(Administered by Nonprofit Institutions)

FEDERALLY FUNDED RESEARCH AND DEVELOPMENT CENTERS perform or administer R&D programs for the Federal Government. The centers were established by the Government, or operate under a long-term commitment with it.[1] Each FFRDC is largely financed by a single Federal agency that in most cases played a major role in its creation. The actual performance or management of research and development by an FFRDC is done either at the specific request of the sponsoring Federal agency or under a broad charter awarded to it by the agency. In either case, these centers operate under contract with varying degrees of supervision from their sponsoring agencies.

FFRDC's may be grouped in the three categories of their administering organizations: universities and colleges, industrial firms, and independent nonprofit R&D performers. This report summarizes financial and manpower data on the scientific activities of the 24 FFRDC's administered by independent nonprofit organizations in 1966.

During the post-World War II period, FFRDC's were created in response to the Federal Government's need for scientific personnel with a high-level of competence in systems analysis, planning, systems engineering, and technical direction. The first nonprofit-administered FFRDC was the Air Force-sponsored RAND Corporation, formed in 1948 to update the strategies, concepts, and techniques of global warfare.

The types of research and development carried out by RAND and other FFRDC's discussed here are closely related to the missions of their sponsoring agencies. Aerospace Corporation and MITRE Corporation, two of the largest in terms of R&D expenditures, are heavily engaged in systems analysis, planning, and engineering for the Air Force's space and missile-defense weapons systems. The Pacific Northwest Laboratory, sponsored by the Atomic Energy Commission, carries out research and development on the peaceful uses of atomic energy, particularly research on reactor development. The most recent additions to this FFRDC classification—15 nonprofit-administered educational laboratories sponsored by the U.S. Office of Education—perform important research services in areas such as curriculum development, teaching techniques, and the development of educational information systems.

Manpower Characteristics

Employment in all activities in the 24 FFRDC's administered by nonprofit organizations totaled 13,200 in January 1967. Of this total, 5,500 were scientists and engineers; 1,950 were technicians; and the remaining 5,750 were supporting personnel employed mainly in administrative, clerical, and service occupations.

---

[1] The designation of an organization as a Federally Funded Research and Development Center, referred to throughout this report as a "FFRDC," is made by individual Federal agencies reporting for the National Science Foundation's survey of Federal Funds for Research, Development, and Other Scientific Activities. FFRDC's administered by nonprofit institutions—the subject of this section—do not include centers operated by individual universities or university consortia, such as Argonne National Laboratory (University of Chicago) and Kitt Peak National Observatory (Association of Universities for Research in Astronomy, Inc.), as their programs are covered by the National Science Foundation's Survey of Scientific Activities of Institutions of Higher Education.

FTE scientists and engineers. Virtually all scientists and engineers in FFRDC's were full-time employees. FTE employment of such personnel totaled 5,360 in January 1967, including 5,290 performing or administering research and development. Engineers comprised the largest occupational group, with a FTE number of 2,650 involved in research and development. This group accounted for one-half of the FTE number of R&D scientists and engineers employed, with more than two-fifths classified as electrical engineers. Physical scientists ranked next with 990, followed by social scientists, mathematicians, psychologists, and life scientists (chart 6 and appendix table A-23). Included with other social scientists were 200 educators performing research and development in the educational laboratories established by the U.S. Office of Education.

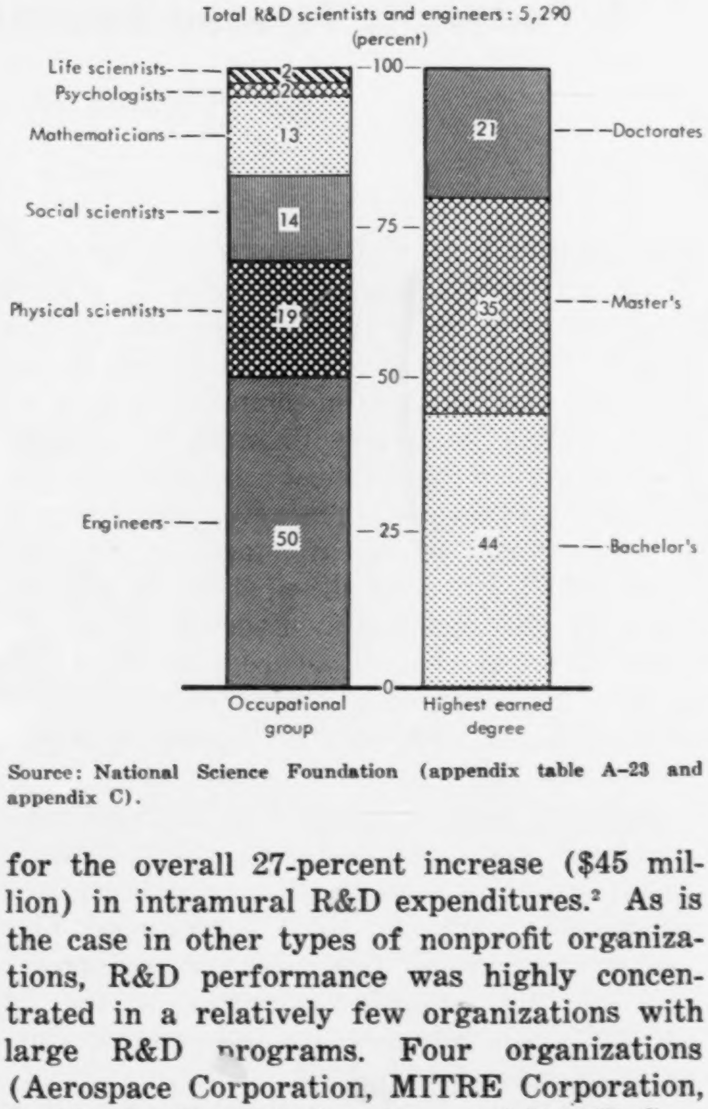
More than one-half of the R&D scientists and engineers employed in FFRDC's held advanced degrees in the sciences or engineering, including 21 percent with doctorates and 35 percent with master's degrees. The remaining 44 percent had bachelor's degrees or the equivalent (chart 6).

Technicians. Technician employment totaled 1,950 in January 1967. Of this total, virtually all (1,920) were primarily engaged in assisting scientists and engineers in R&D performance. The field-of-science classification of technicians employed in research and development was as follows:

	Number
Total	1,920
Engineering and physical sciences	950
Life sciences	760
Social sciences	20
Other sciences	190

In carrying out R&D activities, FFRDC's employed an average of 36 technicians per 100 FTE scientists and engineers.

Chart 6. Distribution of R&D scientists and engineers (FTE) in Federally Funded Research and Development Centers, by occupational group and highest earned degree, January 1967



Source: National Science Foundation (appendix table A-23 and appendix C).

R&D Expenditures

The addition of 16 FFRDC's between 1964 and 1966 was the principal factor accounting for the overall 27-percent increase ($45 million) in intramural R&D expenditures.[2] As is the case in other types of nonprofit organizations, R&D performance was highly concentrated in a relatively few organizations with large R&D programs. Four organizations (Aerospace Corporation, MITRE Corporation, Pacific Northwest Laboratory, and RAND Corporation) had combined R&D expenditures of $166 million in 1966, or four-fifths of the total for all nonprofit-administered FFRDC's.

Field of science. More than one-half of the research and development performed by FFRDC's in 1966 was concentrated in the engineering sciences. The level of expenditures for this discipline was $114 million in both 1964 and 1966. Aerospace Corporation, MITRE Corporation, Pacific Northwest Laboratory, and the RAND Corporation accounted for $110 million, or 96 percent of total engineering expenditures. Physical sciences ranked next in support, receiving $44 million, or one-fifth of the total intramural R&D outlay. This was a 124-percent increase over the amount expended for this field in 1964.[3] The remaining fields received $56 million. The amounts reported by field of science for 1964 and 1966 are shown in the following table:

---

[2] The largest addition to the list of nonprofit FFRDC's was the Pacific Northwest Laboratory, administered by Battelle Memorial Institute, whose R&D expenditures totaled $33 million in 1966. Prior to 1966, the Pacific Northwest Laboratory was operated by the General Electric Company and was classified in the industry sector of the economy.

	(Thousands of dollars)	
	1964 [a]	*1966*
Total	$168,790	$213,950
Engineering	114,470	114,270
Physical sciences	19,720	44,100
Mathematical sciences	18,370	26,850
Life sciences	8,120	7,230
Psychological sciences	1,040	2,460
Social sciences	7,080	[b]19,040

[a] Revised data.

[b] Includes approximately $5 million for research in education.

---

[3] Pacific Northwest Laboratory, which was not classified as a nonprofit-administered FFRDC in 1964, expended $13 million on research in the physical sciences in 1966.

5. Societies and Academies of Science

SOCIETIES, as defined for this survey, include professional or technical societies known to support scientific activities. They are voluntary associations of individuals sharing a common interest in the advancement of knowledge within a specialized field. *Academies of science* differ from societies in that they tend to avoid disciplinary specialization in furthering scientific advancement. This study includes societies and academies of science that are national in scope and membership, as well as those organized on a strictly local basis. Data for branch or affiliate organizations were in all cases collected from the parent organization.

The major function of both scientific societies and academies of science is to aid and encourage the collection, collation, and dissemination of scientific knowledge for the benefit of their members and the scientific community as a whole. This function is accomplished by holding conferences and symposia where the results of research can be discussed and evaluated. Probably the most important method of diffusing knowledge and stimulating thought utilized by scientific societies and academies is their publication of journals, proceedings of meetings and conferences, and special reports. Such publications comprise by far the most comprehensive literature of science available to the scientific community.

Manpower Characteristics

Societies and academies of science employed 2,060 scientists and engineers in January 1967, or 15 percent of the total working force (13,900) employed by these institutions. In addition to paid staff members, many of the societies' and academies' 3 million professional members voluntarily contributed time and effort in carrying out the research and administrative functions of these organizations.[1] Among the principal employment characteristics of societies and academies of science were the following:

	Jan. 1965	*Jan. 1967*
Total employment	12,750	13,900
Scientists and engineers, all activities	1,590	2,060
R&D scientists and engineers	(310)	(760)
All other personnel	11,160	11,840

The preceding data show the increased emphasis in R&D activities. In January 1967, 37 percent of the scientists and engineers were principally engaged in research and development, compared with only 19 percent in January 1965.

Seven organizations together employed 1,030 scientists and engineers, with 400 in R&D activities. These large organizations thus accounted for 50 percent of the total number of scientists and engineers employed and 53 percent of those involved in research and development. In contrast, 21 societies and academies of science with total expenditures exceeding $50,000 reported intramural R&D activities, although they employed no salaried scientists or engineers. However, the intramural R&D expenditures in most of these institutions amounted to less than $25,000 per institution.

Three-fifths of the scientists and engineers employed by societies and academies held degrees higher than the baccalaureate, including 36 percent with doctorates. The primary function of 47 percent of the persons holding doctorates was in the R&D area. The distribution of scientists and engineers by highest earned degree in January 1967 was as follows:

---

[1] Total membership does not take into account the multiple memberships that exist in certain fields. Institutions were asked to report only scientists and engineers actually employed, *i.e.*, paid by the organizations.

	Total	*R&D*	*Other activities*
Total	2,060	760	1,290
Ph.D. or Sc.D.	550	220	320
M.D., D.D.S., etc.	190	130	50
Master's	530	190	350
Bachelor's or equivalent	790	220	570

Total Expenditures for Scientific Activities

Societies and academies of science reported spending $129 million, or 48 percent of their total expenditures for scientific activities in 1966 (appendix table A–24). The bulk of this amount, $107 million (83 percent) was expended for scientific and technical information activities. Those organizations with total expenditures of $1 million or more in 1966 accounted for 78 percent of total expenditures for all activities; 76 percent of all scientific and technical information activities, and 73 percent of all intramural R&D activities.

R&D Expenditures

Expenditures for research and development by societies and academies of science amounted to $22 million in 1966. Three-fourths of these funds ($16 million) were for R&D projects conducted by these organizations' own staff. The seven largest institutions in terms of R&D support accounted for more than $7 million, or one-half of all intramural R&D outlays. (See appendix table A–6.)

Source of funds. The Federal Government financed 35 percent ($5 million) of intramural research and development performed by societies and academies of science in 1966. Internal funding more than doubled between 1964 and 1966, accounting for $7 million, or one-half of total intramural R&D performance. The most significant change was in industrial support, which increased to $1 million, or more than three times the 1964 level. Intramural R&D financing by source of funds for 1964 and 1966 was as follows:

(Dollar amounts in thousands)

	1964		*1966*	
	Amount	*Percent distribution*	*Amount*	*Percent distribution*
Total	$8,770	100	$15,680	100
Organizations' own funds	3,530	40	7,450	48
Federal Government	3,210	37	5,480	35
Industry	330	4	1,140	7
State and local governments	700	8	420	3
Other sources	1,000	11	1,190	8

Field of science. Funds for intramural R&D performance in the life sciences by societies and academies totaled $7 million in 1966, or 44 percent of the total. The physical sciences ranked second with $3 million, or 19 percent. Intramural R&D financing by field of science for 1964 and 1966 was as follows:

(Dollar amounts in thousands)

	1964		*1966*	
	Amount	*Percent distribution*	*Amount*	*Percent distribution*
Total	$8,770	100	$15,680	100
Engineering	1,040	12	2,220	14
Physical sciences	1,010	12	2,990	19
Mathematical sciences	20	[a]	280	2
Life sciences	4,700	54	6,900	44
Psychological sciences	170	2	540	3
Social sciences	1,830	21	2,750	18

---

[a] Less than 1 percent.

Only 27 percent of societies' and academies' total R&D expenditures were used to finance the R&D activities of outside organizations and individuals. This was a significant reduction from the 44 percent recorded in 1964. The largest extramural cutback in 1966 was the $460,000 decrease in research performed outside the United States. The distribution of extramural R&D funds was as follows:

(Dollar amounts in thousands)

	1964 Amount	*1964* Percent distribution	*1966* Amount	*1966* Percent distribution
Total	$6,930	100	$5,860	100
Universities and colleges	4,230	61	3,830	66
Other nonprofit organizations	840	12	730	12
Other recipients	1,090	16	980	17
Foreign	780	11	320	5

Note: In addition, societies and academies granted $217,000 to other societies and academies for the performance of research and development in 1966. This was $144,000 more than was extended in 1964.

Scientific and Technical Information

The advancement of science through the publication and dissemination of scientific and technical information is a major goal of societies and academies of science. Societies also contribute to the advancement of scientific research by sponsoring meetings of scientists, organizing lecture programs, conducting conferences and symposia, and by serving through their advisory committees as scientific trustees for the channeling of private R&D funds.

In 1966, $110 million was expended for scientific and technical information activities (appendix table A–25), an increase of 24 percent over the $89 million reported in 1964. The largest portion, 71 percent, was directed toward the publication and distribution of scientific and technical information. The amounts reported for the various types of science information activities were as follows:

(Dollar amounts in thousands)

	1964 Amount	*1964* Percent distribution	*1966* Amount	*1966* Percent distribution
Total	$89,090	100	$110,060	100
Publication and distribution	64,550	72	78,310	71
Library science information centers and other reference services	4,650	5	7,050	6
Scientific symposia and technical meetings	19,140	21	21,760	20
R&D projects on scientific communication and documentation	760	1	2,950	3

Societies and academies with 25,000 or more members in 1966 accounted for 52 percent ($57 million) of the total scientific and technical information expenditures (appendix table A–25). Organizations in this category also financed 60 percent ($47 million) of the amount expended for the publication and distribution of scientific and technical information and 20 percent ($4 million) of the cost of scientific symposia and technical meetings.

The Federal Government financed 16 percent ($17 million) of the $110 million expended in 1966 by societies and academies of science for scientific and technical information activities. (See composite society and academy questionnaire in appendix C.) Three institutions received over $1 million. The National Academy of Sciences received $10 million, or 56 percent of the total Government support.

Virtually all of the societies' and academies' scientific and technical information activities (98 percent) were conducted in 14 States and the District of Columbia in 1966 (appendix table A–26). Although the largest institutions operated from fixed locations, many others maintained no fixed facilities and listed their locations as the office of an elected official. The election of new officers usually results in a change in location. However, the geographic distribution of scientific and technical information expenditures is not necessarily limited to the physical location of an institution. For example, $22 million of the funds expended by institutions in the areas listed in appendix table A–26 supported many scientific symposia and technical meetings that were conducted in geographic areas other than that of the sponsoring institution.

6. Private Philanthropic Foundations[1]

ALTHOUGH PRIVATE PHILANTHROPIC FOUNDATIONS account annually for a relatively small portion of total national funds for scientific activities, the significance of their financial support in the sciences and engineering extends beyond purely dollar measures. These organizations possess somewhat more flexibility in their operations and wider opportunities to support research and educational projects than do most other types of public or private organizations. Much of their support is devoted to basic research conducted in universities and colleges. Private foundations also extend assistance to programs other than research, including education, health and welfare, and cultural activities.

Foundations contributed to the discovery of insulin, penicillin, and the polio vaccines, and supported measures for the control of malaria, yellow fever, hookworm, and other endemic diseases. Philanthropic foundations have helped to advance scientific agriculture by supporting research in plant genetics, plant pathology, and other agricultural sciences. And they are heavily financing research on heart disease and cancer.

Statistics on the financial and manpower resources allocated to scientific activities by private philanthropic foundations shown in this report represent universe estimates. The 1966 survey canvassed 345 foundations, including all foundations with assets of $1 million or more that supported scientific activities in 1964. Of these, 273 (79 percent) responded, including 239 that financed scientific activities in 1966. Estimates of the financial and manpower characteristics of survey nonrespondents were derived in part through statistical relationships developed in the 1964 survey, in which questionaires were mailed to a stratified random sample of 2,155 private philanthropic foundations.[2]

Manpower Characteristics

Because of the nature of their activities, private foundations employ relatively few scientists and engineers. Foundations supporting scientific activities employed 2,480 persons with about three-fourths of them engaged in the performance or administration of research. (See composite questionnaire for private philanthropic foundations in appendix C.) It should be noted that these employment figures do not include the large number of individuals at all professional levels who voluntarily assist foundations in their philanthropic activities.

Total Research Expenditures[3]

Total expenditures for scientific research financed by private philanthropic foundations increased from $36 million in 1953 to $92 million in 1966, a compound annual rate of 7.5

---

[1] For the purposes of this survey, a foundation was defined as a nongovernmental, nonprofit organization having a principal fund of its own managed by its own trustees or directors, and established to serve the common welfare.

[2] For details on 1964 survey coverage of private philanthropic foundations, see National Science Foundation, *Scientific Activities of Nonprofit Institutions, 1964*, NSF 67-17, Washington, D.C. 20402: Supt. of Documents, U.S. Government Printing Office, 1967, pp. 61–62. According to the Foundation Library Center, there were about 18,000 active private philanthropic foundations in 1966. (See *The Foundation Directory*, vol. 3. New York: Russell Sage Foundation, 1967, p. 9.)

[3] These data are based on separate surveys of private foundations covering 1953, 1957, 1960, 1964, and 1966. While the number of foundations included in each of the surveys varied considerably, analysis of data from the 1964 and 1966 survey and information from other sources indicate that the total figures for research funds reported in the earlier surveys represented more than 90 percent of the universe.

percent. Although private foundations expanded their research financing during the period, their rate of increase had been gradually declining. During 1964–66, research funding increased by less than 3 percent. This lower rate was largely due to a decline in research support by the numerous foundations with less than $10 million in assets. In 1964, for example, foundations in this category accounted for $18 million, or 21 percent of total research expenditures; in 1966, only $11 million, or 12 percent (table 5). Foundations with $10–$99 million in assets supported research at roughly the same level as in 1964. However, the largest foundations, with assets of $100 million or more, increased their research support from $56 million in 1964 to $65 million in 1966.

Current expenditures for research amounted to $74 million (81 percent) of the $92 million in research expenditures.[4] (See appendix table A–27.) Capital expenditures and endowments were 17 percent and 2 percent, respectively. In comparison, in 1964 current expenditures accounted for 77 percent; capital expenditures, 14 percent; and endowments for research, 9 percent.

Research Expenditures of Foundations With the Largest Research Programs

Three of the private philanthropic foundations, each with $100 million or more in assets, reported combined total assets in excess of $4 billion. These three foundations, the Ford Foundation, John A. Hartford Foundation, and the Rockefeller Foundation, provided three-fifths ($56 million) of the $92 million expended by foundations for research in the sciences. This is significant since their assets comprised only two-fifths of the $10 billion in total assets of all philanthropic foundations supporting research. Research funds awarded by these three foundations amounted to 57 percent of philanthropic foundations' current research expenditures, 77 percent of their capital research expenditures, and 63 percent of the total funds extended as endowments for research (appendix table A–28).

The 100 foundations with the largest R&D expenditures accounted for 93 percent of the $92 million expended by private philanthropic foundations for scientific research in 1966 (chart 7 and appendix table A–28). They financed 92 percent of the foundations' current research expenditures, 97 percent of their capital research expenditures, and 96 percent of their endowments. Although research endowments are usually preferred by universities

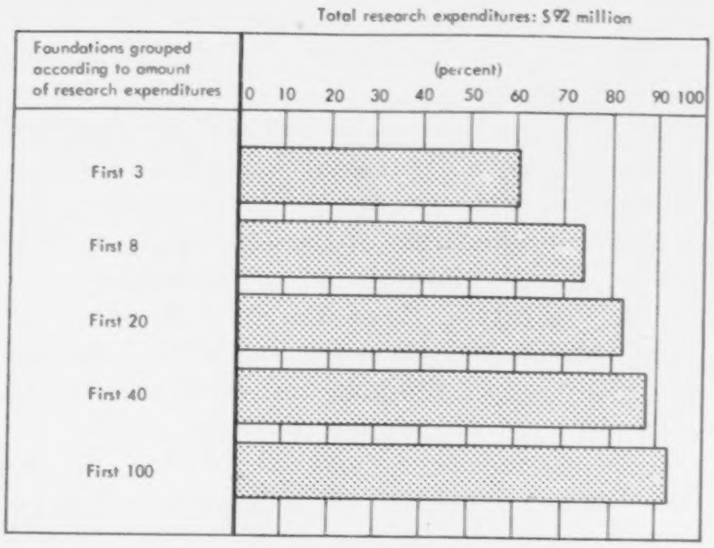
TABLE 5. *Expenditures of private philanthropic foundations, by asset size-class and type of expenditure, 1964 and 1966*

Asset size-class	Total program expenditures		Expenditures for all scientific activities		Expenditures for research	
	1964	1966	1964	1966	1964	1966
	Thousands of dollars					
Total	$579,810	$666,560	$198,410	$204,438	$89,200	$91,787
Less than $10,000	114,649	93,211	43,253	30,951	18,389	11,421
$10,000 to $99,999	117,961	111,282	42,460	45,739	14,601	15,821
$100,000 or more	347,200	462,067	112,697	127,748	56,210	64,545
	Percent distribution					
Total	100.0	100.0	100.0	100.0	100.0	100.0
Less than $10,000	19.8	14.0	21.8	15.1	20.6	12.4
$10,000 to $99,999	20.3	16.7	21.4	22.4	16.4	17.2
$100,000 or more	59.9	69.3	56.8	62.5	63.0	70.3

---

[4] These data do not include research expenditures totaling $9 million reported by 18 operating foundations, which, for the purpose of this report, were grouped with research institutes. (See section 3.)

Chart 7. Distribution of research expenditures among selected groups of private philanthropic foundations ranked from highest to lowest in terms of total research expenditures, 1966



Source: National Science Foundation (appendix table A-28).

and colleges, they constituted the smallest share of these foundations' total research expenditures, amounting to less than 2 percent. Universities and colleges, however, received 92 percent of the research funds expended by the top 100 foundations. This group of foundations also accounted for virtually all foundation-financed research performed by foreign organizations and individuals.

Recipients. The three largest foundations—the Ford Foundation, the John A. Hartford Foundation, and the Rockefeller Foundation—provided almost three-fifths of the $45 million in extramural research funds received by universities and colleges from foundations. These three foundations also provided over one-half the $12 million awarded to research institutes by foundations. The John A. Hartford Foundation accounted for three-fifths of the $6 million received by nonprofit hospitals, and the Ford Foundation for more than one-half of the $6 million contributed to other nonprofit organizations by foundations. Private foundations and trusts, individuals, and other recipients were granted $4 million by private philanthropic foundations. (See appendix table A-29.)

Research performed outside the United States by foreign individuals and organizations totaled $16 million, or 18 percent of foundations' extramural financing. Of this amount, more than $13 million represented grants from the Ford and Rockefeller Foundations. The bulk of foreign assistance funds was utilized to employ consultants, mainly from American universities, to aid in the establishment of new educational activities in the less developed nations.[5] Primary emphasis was placed on agricultural research and development, research in reproductive biology, university development, and development planning and management.

Current Research Expenditures, by Field of Science

Research expenditures in the life sciences amounted to $40 million, or more than one-half of the $74 million that private foundations provided in current research expenditures. Four-fifths of the life sciences' research funds were expended for medical and health-related research (appendix table A-30). The social sciences were second in research expenditures ($21 million), followed by mathematical and physical sciences ($10 million), psychological sciences ($2 million), and engineering ($840,000).

Foundations with assets of $100 million or more provided more than four-fifths of the total research funds in the social sciences and two-thirds of the research funds in the life sciences. The relatively heavy financing in these two fields was due principally to the activities of two large foundations. The Ford Foundation, which placed greatest emphasis on research in the social sciences, granted $12 million, or 61 percent of the total for that discipline. The John A. Hartford Foundation stressed research in the life sciences, expending $14 million, or 35 percent of the total for that field.

---

[5] Private foundations also financed research performed in foreign countries by scientists and engineers employed directly by U.S. organizations. These funds are included with extramural research expenditures in the United States and are not shown separately.

Expenditures for Education in the Sciences

Private philanthropic foundations extended greater financial support to education in the sciences than they provided for research. Of the $108 million in educational assistance, more than one-half was provided by 16 foundations with assets of $100 million or more. (See appendix table A–31.) The Ford Foundation alone accounted for one-third of all program expenditures for education in the sciences. Foundations with assets ranging from $10 million to $99 million financed one-fourth of the foundation total expenditures for education in the sciences; those with under $10 million in assets recorded contributions amounting to one-sixth of total funds expended.

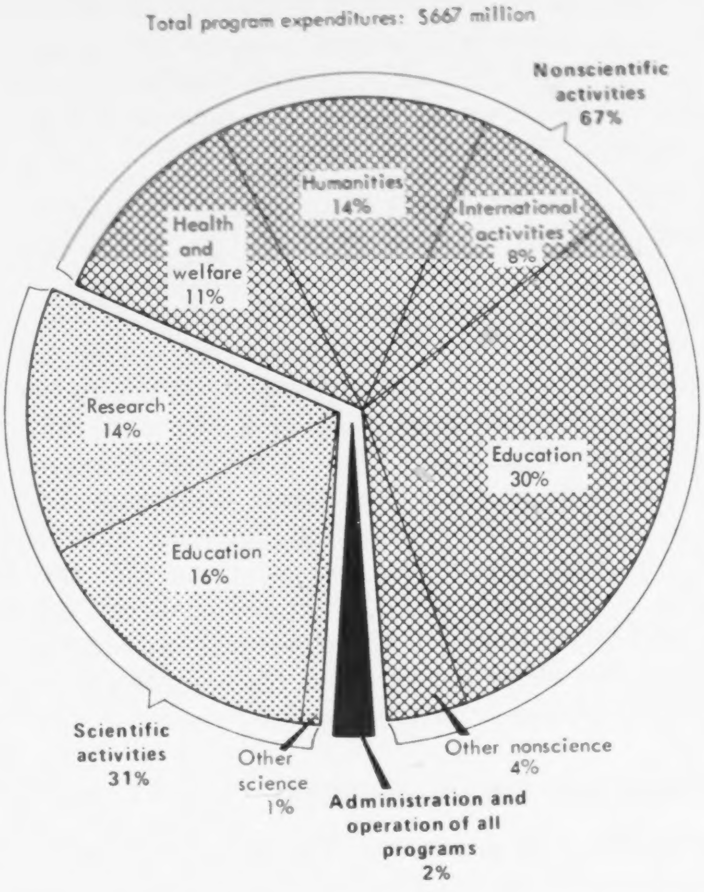
Current expenditures accounted for 43 percent of total funds spent for education in the sciences. This was a much smaller share than that for research in the sciences. Grants for fellowships and scholarships amounted to $31 million, or 29 percent of total education expenditures. Capital expenditures were next with $26 million. The remaining $5 million for education in the sciences was granted in the form of endowments.

Medical and health-related education was supported by grants totaling $34 million in 1966. Current and capital expenditures in this area each accounted for $12 million. An additional $7 million was granted in the form of fellowships or scholarships. Endowments for medical and health-related education totaled less than $2 million in 1966.

Total Nonscience Expenditures

Total program expenditures of private philanthropic foundations on other than scientific activities amounted to $446 million in 1966. This was more than double the $204 million expended on scientific pursuits (appendix table A–32). The greatest nonscientific emphasis was placed on education, which received $198 million (chart 8). Total science and nonscience educational support thus comprised 46 percent of total foundation program expenditures. Other foundation expenditures included health and welfare ($74 million), humanities ($96 million), international activities ($51 million), and $43 million for other program activities.

Chart 8. Total program expenditures of private philanthropic foundations, by major area of support, 1966



Source: National Science Foundation (appendix table A–32).

7. Science Exhibitors and Other Nonprofit Institutions

Science Exhibitors

SCIENCE EXHIBITORS include science museums, zoological parks, botanical gardens, and arboretums. They serve as educational institutions, agencies of scientific and academic research, and community cultural centers. Although the collection and preservation of objects of scientific interest receive the major emphasis, the task of educating local communities to the advances made in science has been growing in importance.

The research programs of science exhibitors, although only a small part of their total science programs, make unique contributions to knowledge. Experiments such as those conducted by the New York Botanical Garden on the utilization of fungi and algae for the production of protein might lead to a means of alleviating world hunger. The American Museum of Natural History has been analyzing the principles of communication between nations of different ideologies and studying the theories of trans-Pacific contact between the ancient civilizations of the Americas and Asia. Numerous other examples of the science exhibitors' research activities could be cited.

Manpower Characteristics

Scientists and engineers. The 48 science exhibitors reporting science activities employed 600 scientists and engineers in January 1967. The principal areas of their scientific activity are shown by occupational group in the tabulation above.

	Total number	*FTE number*	
		Total	*R&D*
Total	600	540	430
Engineers	[a]	[a]	----
Physical scientists	100	80	60
Mathematicians	[a]	[a]	----
Life scientists	390	350	290
Psychologists	[a]	[a]	----
Social scientists	110	110	80

[a] Less than 5.

Life scientists constituted 65 percent of the total FTE number employed; social scientists, 20 percent. Among the life scientists, the 330 biological scientists (FTE number) alone were three-fifths of the exhibitors' total employment of scientists and engineers. (See composite science exhibitor questionnaire in appendix C.)

Four-fifths (430) of the FTE scientists were engaged in some aspect of research and development, a 13-percent increase from January 1965. Of the 430 full-time-equivalent number of R&D scientists, 270 were biological scientists, including 90 working on medical and health-related projects.

Level of education. Nearly three-fourths of all FTE scientists and engineers attained graduate degrees; nearly one-half held the Ph.D. or Sc.D.; over one-fifth, the master's degree. Of the FTE scientists engaged in research and development, nearly one-half held doctorate degrees. The distribution of FTE scientists and engineers by highest earned degree in January 1967 was as follows:

	Total	*R&D*	*Other activities*
Total	540	430	110
Ph.D. or Sc.D.	260	200	50
M.D., D.D.S., etc.	10	10	[a]
Master's	120	100	20
Bachelor's or the equivalent	160	120	40

[a] Less than 5.

Technicians. Science exhibitors employed 270 technicians in January 1967, of which three-fifths were working in R&D programs.

Occupational group	*Total*	*R&D*	*Other activities*
Total	270	170	100
Engineering and physical sciences	20	20	[a]
Life sciences	200	130	80
Social sciences	20	10	[a]
Other sciences	30	10	20

---

[a] Less than 5.

Note: Figures rounded to the nearest 10.

The ratio of technicians engaged in research and development to the FTE number of R&D scientists was 1:2.5. Three-fourths of the total number of R&D technicians assisted scientists working on R&D projects in the life sciences. The remaining 40 technicians were fairly evenly distributed among the other sciences and engineering.

Total R&D Expenditures

During 1966, science exhibitors expended $9.8 million for research and development—a 32-percent increase over the $7.5 million spent in 1964 (table 6). Current expenditures for internal R&D projects in the physical, life, and social sciences accounted for $8.4 million, or 86 percent of the total R&D funds. Extramural R&D financing amounted to only $20,000.

Medical and health-related projects accounted for $2.3 million (23 percent of total R&D funds) in 1966. Nearly $2 million, or 88 percent of the medical and health-related R&D total, was in current expenditures for intramural R&D performance. In comparison, in 1964 medical and health-related research accounted for 24 percent ($1.8 million) of total R&D expenditures. And 92 percent ($1.6 million) of this amount was for current expenditures on intramural research.

Exhibitors had increased their capital expenditures by 63 percent between 1964 and 1966 from $850,000 to $1.4 million. This was largely due to expenditures reported by the New York Zoological Park Society for the Osburn Laboratory of Marine Science's research program into the problems and nature of marine organic life.

TABLE 6. *Total R&D expenditures of science exhibitors, by type of expenditure, 1964 and 1966*

[Thousands of dollars]

Type of expenditure	1964		1966	
	Total	Medical and health-related R&D	Total	Medical and health-related R&D
Total R&D expenditures	$7,458	$1,797	$9,811	$2,260
Intramural	7,286	1,773	9,791	2,255
Current expenditures	6,432	1,647	8,403	1,984
By source of funds:				
Organizations' own funds	3,523	540	4,525	686
Federal Government	1,969	952	2,593	1,167
Industry	------	------	12	5
State and local governments	606	------	682	41
Other sources	334	155	591	85
By field of science:				
Engineering	------	------	------	------
Physical sciences	580	55	1,051	43
Mathematical sciences	------	------	2	------
Life sciences	4,848	1,482	5,942	1,856
Psychological sciences	103	------	------	------
Social sciences	901	110	1,408	85
Capital expenditures	854	126	1,388	271
Extramural	[a]172	24	20	5

[a] Excludes $89,000 for extramural financing of research and development performed by other institutions within the nonprofit sector.

Intramural R&D Performance

Source of funds. One-half ($4.5 million) of current expenditures of science exhibitors were from their own funds in 1966 (table 6). Federal agencies provided 31 percent ($2.6 million). State and local governments contributed $680,000; while industry, other nonprofit organizations, and individuals accounted for the remaining $600,000. Although current expenditures in 1966 were $2.0 million higher than the 1964 amount, each source continued to contribute the same percentage of the total.

In 1966, the primary source for medical and health-related R&D funds was the Federal Government, which supplied $1.2 million, or three-fifths of the total current expenditures for this purpose. Exhibitors' own funds accounted for an additional $690,000. Support from all other sources combined amounted to only $130,000. The Federal Government and the exhibitors' own funds were responsible for a little higher proportion of current funds in 1966. And contributions from "other sources" (individuals and other nonprofit organizations) decreased by nearly one-half.

Field of science. Nearly three-fourths ($5.9 million) of the current expenditures for research and development by science exhibitors was allocated to the life sciences (table 6). Medical and health-related research in this field accounted for $1.9 million. Next in dollar volume were the social sciences ($1.4 million) and the physical sciences ($1.1 million).

Other Nonprofit Institutions

This institutional category includes independent nonprofit institutions engaged in the performance or financing of research or other scientific activities that could not be readily classified into any of the institutional groups previously covered in other parts of this report. The kinds of activities in which such institutions were principally engaged included the following: rehabilitation services; vocational, educational, and training programs; consumer services; and information dissemination.

Manpower Characteristics

Scientists and engineers. The 45 institutions in this category reported employing a total of 790 scientists and engineers. By taking into account part-time employment, this number is reduced to approximately 620 scientists and engineers in terms of full-time equivalents. Four-fifths of this FTE number were primarily engaged in the performance or administration of research and development (table 7). Most of the scientists engaged in research and development were either psychologists or life scientists. Psychologists alone accounted for 45 percent of the total.

Level of education. More than four-fifths of all FTE scientists and engineers had attained graduate degrees; two-fifths held the Ph.D. or Sc.D., one-fifth held medical doctorates, and

TABLE 7. *Total and FTE number of scientists and engineers employed by other nonprofit organizations, by occupational group and function, January 1967*

Occupational group	Total number	Full-time-equivalent number		
		Total	Function	
			R&D total	Medical and health-related R&D
Total	792	620	504	278
Engineers	24	21	15	12
Physical scientists	6	6	6	--
Mathematicians	8	8	8	2
Life scientists	352	274	193	168
Psychologists	308	230	227	71
Social scientists	94	81	55	25

one-fifth held master's degrees. Of the 500 FTE scientists and engineers in R&D activities at these institutions, 62 percent held the doctorate (including medical degrees) and 24 percent, the master's degree. The distribution of FTE scientists and engineers by highest earned degree in January 1967 was as follows:

	Total	*R&D*	*Other activities*
Total	620	500	120
Ph.D. or Sc. D.	250	240	10
M.D., D.D.S., etc.	140	70	70
Master's	140	120	20
Bachelor's or the equivalent	90	70	10

Technicians. Nearly nine-tenths (210) of the 240 technicians employed by these "other" nonprofit organizations were engaged in R&D projects. The ratio of technicians engaged in research and development to the FTE number of R&D scientists was 1:2.4. Three-fifths of the R&D technicians assisted in the life sciences. The distribution of technicians by occupational group is shown in the following data:

	Total	*R&D*	*Other activities*
Total	240	210	30
Engineering and physical sciences	20	10	10
Life sciences	150	130	20
Social sciences	20	20	--
Other sciences	50	50	(*a*)

---

[a] Less than 5.

Total R&D Expenditures

The "other" nonprofit institutions allocated 15 percent ($14.5 million) of their total expenditures for R&D programs in 1966. This was a 45-percent increase over the $10.0 million recorded in 1964. The increment can be attributed largely to the growth in total expenditures. The distribution of expenditures for 1964 and 1966 is shown in the following data:

	(Millions of dollars)	
	1964	*1966*
Total expenditures	$71.6	$93.9
Total R&D expenditures	10.0	14.5
Intramural	7.4	9.3
Capital	.1	1.3
Extramural	2.4	3.9
Other expenditures	61.6	79.4

The $14.5 million expended for research and development included $9.3 million in current expenditures for intramural research and development. An additional $1.3 million was spent for new facilities and equipment to expand the intramural research capability. Extramural research and development accounted for $3.9 million. Three-fourths of this amount went to universities and colleges and other nonprofit organizations within the United States.

Medical and health-related research and development comprised three-fifths ($8.7 million) of total R&D expenditures reported by these institutions (table 8). Almost three-fourths ($6.4 million) of this total consisted of current expenditures. Extramural R&D expenditures to finance medical and health-related programs was $2.1 million. Capital expenditures associated with intramural medical and health-related programs accounted for the remaining $250,000.

Intramural R&D Performance

Source of funds. Internal financial resources of these organizations provided 41 percent ($3.8 million) of their total current expenditures for intramural research and development. The Federal Government provided $3.6 million, 95 percent of which went for the support of medical and health-related research and development (table 8). Additional support for the medical and health area came from the organizations' own funds, 38 percent ($2.4 million); industry, State and local governments, and other sources (including individuals) provided the remaining $640,000 in medical and health-related R&D expenditures.

Field of science. Nearly one-half of the $9.3 million in current intramural R&D expenditures was allocated for research in the life sciences. More than 90 percent of this amount was concentrated in the medical and health-related area. This emphasis is not surprising in view of the primary concern that many of these nonprofit institutions have in medical and psychological rehabilitation. The psychological sciences were second in current intramural R&D expenditures with about two-fifths of the total (table 8).

TABLE 8. *Total R&D expenditures of other nonprofit organizations, by type of expenditure, 1966*

[Thousands of dollars]

Type of expenditure	Total	Medical and health-related R&D	Other activities
Total R&D expenditures	$14,498	$8,783	$5,715
Intramural	10,599	6,692	3,907
Current expenditures	9,284	6,446	2,838
By source of funds:			
Organizations' own funds	3,829	2,421	1,408
Federal Government	3,578	3,386	192
Industry	51	13	38
State and local governments	305	118	187
Other sources	1,521	508	1,013
By field of science:			
Engineering	225	225	--
Physical sciences	16	--	16
Mathematical sciences	318	61	257
Life sciences	4,444	4,078	366
Psychological sciences	3,554	2,019	1,535
Social sciences	727	63	664
Capital expenditures	1,315	246	1,069
Extramural	3,899	2,091	1,808

Appendixes

33/34

APPENDIX A

Statistical Tables

TABLE — Page

A–1. Current expenditures for intramural R&D performance of independent nonprofit institutions, by source of funds, 1953–1966 ---- 37

A–2. Total number of scientists and engineers employed by independent nonprofit institutions, by type of organization and highest earned degree, January 1967 ---- 37

A–3. Geographic distribution of scientists and engineers in independent nonprofit institutions, by type of organization, January 1967 ---- 38

A–4. Total number of technicians employed by independent nonprofit institutions, by type of organization and occupational group, January 1967 ---- 39

A–5. Current expenditures for intramural R&D performance of independent nonprofit institutions, by type of organization and source of funds, 1966 ---- 39

A–6. Current expenditures for intramural R&D performance of independent nonprofit institutions, by type of organization and R&D expenditure size-class, 1966 ---- 39

A–7. Federal expenditures for current intramural R&D performance of independent nonprofit institutions, by type of organization and R&D expenditure size-class, 1966 ---- 40

A–8. Current expenditures for intramural R&D performance of independent nonprofit institutions, by type of organization and field of science, 1966 ---- 40

A–9. Current expenditures for intramural R&D performance of independent nonprofit institutions, by R&D expenditure size-class and field of science, 1966 ---- 40

A–10. Current expenditures for intramural R&D performance and manpower characteristics of independent nonprofit institutions, by geographic division ---- 41

A–11. Current expenditures for intramural R&D performance and manpower characteristics of independent nonprofit institutions among the 15 States leading in R&D expenditures ---- 41

A–12. Current expenditures for intramural and extramural R&D performance of independent nonprofit institutions, by type of organization, 1966 ---- 42

A–13. Current expenditures for medical and health-related intramural and extramural R&D performance of independent nonprofit institutions, by type of organization, 1966 ---- 42

A–14. Current expenditures for medical and health-related intramural R&D performance of independent nonprofit institutions, by type of organization and source of funds, 1966 ---- 42

A–15. Current expenditures for medical and health-related intramural R&D performance of independent nonprofit institutions, by type of organization and field of science, 1966 ---- 43

A–16. Selected manpower characteristics of research institutes, by R&D expenditure size-class, January 1967 ---- 43

TABLE | Page

A–17. Total and FTE number of scientists and engineers employed by research institutes, by occupational group and function, January 1967 ... 44

A–18. Concentration of R&D activities among selected groups of research institutes with the largest R&D programs ... 44

A–19. Current expenditures for intramural R&D performance of research institutes, by source of funds and R&D expenditure size-class, 1966 ... 45

A–20. Current expenditures for medical and health-related intramural R&D performance of research institutes, by source of funds and R&D expenditure size-class, 1966 ... 45

A–21. Current expenditures for intramural R&D performance of research institutes, by field of science, 1966 ... 46

A–22. Selected characteristics of intramural R&D activities of research institutes, by R&D expenditure size-class ... 46

A–23. Total and FTE number of scientists and engineers employed by FFRDC's administered by nonprofit institutions, by occupational group and function, January 1967 ... 47

A–24. Total expenditures for scientific activities of societies and academies of science, by type of activity and total expenditure size-class, 1966 ... 47

A–25. Expenditures for scientific and technical information activities of societies and academies of science, by type of activity and membership size-class, 1966 ... 48

A–26. States leading in expenditures for scientific and technical information activities of societies and academies of science in 1966 ... 48

A–27. Research expenditures of private philanthropic foundations, by type of expenditure and asset size-class, 1966 ... 49

A–28. Concentration of research expenditures among private philanthropic foundations with the largest research programs, by type of expenditure, 1966 ... 49

A–29. Research expenditures, including medical and health-related research of private philanthropic foundations, by recipient, 1966 ... 50

A–30. Current research expenditures of private philanthropic foundations, by field of science and asset size-class, 1966 ... 50

A–31. Expenditures for education in the sciences by private philanthropic foundations, by type of support and asset size-class, 1966 ... 51

A–32. Total expenditures of private philanthropic foundations with scientific activities, by program and asset size-class, 1966 ... 51

TABLE A–1. *Current expenditures for intramural R&D performance of independent nonprofit institutions, by source of funds, 1953–1966* [a]

[Millions of dollars]

Year	Total	Federal Government	Industry	Other nonprofit institutions [b]
1953	$110	$60	$20	$30
1954	130	65	25	40
1955	145	75	30	40
1956	165	85	30	50
1957	190	95	30	65
1958	220	110	30	80
1959	260	140	35	85
1960	310	180	40	90
1961	390	240	40	110
1962	490	310	45	135
1963	575	380	50	145
1964	640	440	50	150
1965	720	490	55	175
1966	800	540	60	200

[a] Includes estimates for R&D expenditures of nonprofit hospitals and health agencies, not included in other tables.

[b] Includes funds from State and local governments, organizations' own funds, and other sources.

TABLE A–2. *Total number of scientists and engineers employed by independent nonprofit institutions, by type of organization and highest earned degree, January 1967*

Type of organization	Total number	Ph.D. or Sc.D.	M.D., D.D.S., etc.	Master's	Bachelor's or the equivalent
Total	22,144	5,660	1,288	5,774	9,422
Research institutes	12,732	3,191	822	2,980	5,739
FFRDC's	5,495	1,121	36	1,878	2,460
Societies and academies of science	2,055	547	187	531	790
Private philanthropic foundations	470	175	49	96	150
Science exhibitors	600	274	9	137	180
Other nonprofit organizations	792	352	185	152	103

TABLE A-3. *Geographic distribution of scientists and engineers in independent nonprofit institutions, by type of organization, January 1967*

Geographic location	Total scientists and engineers	Research institutes	FFRDC's	Science exhibitors	Societies and academies of science	Private philanthropic foundations	Other nonprofit institutions
UNITED STATES, TOTAL	22,144	12,732	5,495	600	[a] 2,055	470	792
NORTHEAST	6,964	3,892	1,365	269	642	383	413
New England	2,288	1,157	1,017	21	51	3	39
Maine	85	85					
New Hampshire							
Vermont							
Massachusetts	2,107	1,020	1,017	21	23	1	25
Rhode Island	26	1			25		
Connecticut	70	51			3	2	14
Middle Atlantic	4,676	2,735	348	248	591	380	374
New York	3,163	1,811	118	220	429	378	207
New Jersey	237	71			4		162
Pennsylvania	1,276	853	230	28	158	2	5
NORTH CENTRAL	3,814	2,869	76	148	438	8	275
East North Central	3,069	2,387		121	402	8	151
Ohio	1,455	1,267		20	80		88
Indiana	36	31			2		3
Illinois	1,010	697		83	180	2	48
Michigan	332	183			137		12
Wisconsin	236	209		18	3	6	
West North Central	745	482	76	27	36		124
Minnesota	273	237	6	10	20		
Iowa	18	10			8		
Missouri	332	222	70	17	6		17
North Dakota							
South Dakota							
Nebraska	3	1			2		
Kansas	119	12					107
SOUTH	3,938	2,038	846	23	894	79	58
South Atlantic	2,766	928	825	6	882	77	48
Delaware	85	10				75	
Maryland	363	156	160		15		32
District of Columbia	1,355	446	40		858		11
Virginia	638	42	596				
West Virginia	10		10				
North Carolina	194	189			5		
South Carolina	1	1					
Georgia	21		19			2	
Florida	99	84		6	4		5
East South Central	360	360					
Kentucky	84	84					
Tennessee							
Alabama	276	276					
Mississippi							
West South Central	812	750	21	17	12	2	10
Arkansas							
Louisiana	65	65					
Oklahoma	159	153			6		
Texas	588	532	21	17	6	22	10
WEST	7,428	3,933	3,208	160	81		46
Mountain	270	202	17	44	2		5
Montana	8	7		1			
Idaho							
Wyoming	5						5
Colorado	102	75	11	16			
New Mexico	112	106	6				
Arizona	35	14		19	2		
Utah							
Nevada	8			8			
Pacific	7,158	3,731	3,191	116	79		41
Washington	774	64	708		2		
Oregon	121	95	14				12
California	6,213	3,572	2,469	67	77		28
Alaska	1						1
Hawaii	49			49			

[a] Includes estimate for small societies that were not covered in the survey.

TABLE A–4. *Total number of technicians employed by independent nonprofit institutions, by type of organization and occupational group, January 1967*

Type of organization [a]	Total number		Engineering and physical sciences		Life sciences		Social sciences		Other sciences	
	Total	R&D	Total	R&D	Total	R&D	Total	R&D	Total	R&D
Total	7,403	6,620	3,228	3,108	2,907	2,726	287	275	981	511
Research institutes	4,944	4,329	2,221	2,128	1,803	1,714	233	226	687	261
FFRDC's	1,952	1,917	960	949	756	756	21	21	215	191
Science exhibitors	267	166	24	21	201	125	15	10	27	10
Other nonprofit organizations	240	208	23	10	147	131	18	18	52	49

[a] Data not requested from private philanthropic foundations or societies and academies of science.

TABLE A–5. *Current expenditures for intramural R&D performance of independent nonprofit institutions, by type of organization and source of funds, 1966*

[Dollar amounts in thousands]

Type of organization	Total		Organizations' own funds	Federal Government	Industry	State and local government	Other sources
	Amount	Percent distribution					
Total	$592,532	100.0	$68,303	$434,654	$59,800	$5,525	$24,250
Research institutes	342,405	57.8	47,558	212,228	58,149	3,597	20,873
FFRDC's	213,950	36.1	2,126	210,779	450	519	76
Science exhibitors	8,403	1.4	4,525	2,593	12	682	591
Societies and academies of science	15,677	2.6	7,452	5,476	1,138	422	1,189
Private philanthropic foundations	2,813	.5	2,813	------	------	------	------
Other nonprofit organizations	9,284	1.6	3,829	3,578	51	305	1,521

TABLE A–6. *Current expenditures for intramural R&D performance of independent nonprofit institutions, by type of organization and R&D expenditure size-class, 1966*

[Dollar amounts in thousands]

Type of organization	Total		R&D expenditure size-class							
			Less than $500		$500 to $4,999		$5,000 to $9,999		$10,000 or more	
	Amount	Number of organizations	Amount	Number of organizations	Amount	Number of organizations	Amount	Number of organizations	Amount	Number of organizations
Total	$592,532	543	$37,735	427	$151,993	95	$66,975	10	$335,829	11
Research institutes	342,405	233	19,833	151	117,707	68	59,855	9	145,010	5
FFRDC's	213,950	24	2,402	9	13,609	8	7,120	1	190,819	6
Science exhibitors	8,403	48	3,315	42	5,088	6	------	------	------	------
Societies and academies of science	15,677	191	8,201	184	7,476	7	------	------	------	------
Private philanthropic foundations [a]	2,813	6	344	5	2,469	1	------	------	------	------
Other nonprofit organizations	9,284	41	3,640	36	5,644	5	------	------	------	------

[a] Estimates based upon 1964 data or secondary information; data were not requested.

TABLE A–7. *Federal expenditures for current intramural R&D performance of independent nonprofit institutions, by type of organization and R&D expenditure size-class, 1966*

[Dollar amounts in thousands]

Type of organization	Total Federal		R&D expenditure size-class							
			Less than $500		$500 to $4,999		$5,000 to $9,999		$10,000 or more	
	Amount	Number of organizations	Amount	Number of organizations	Amount	Number of organizations	Amount	Number of organizations	Amount	Number of organizations
Total	$434,654	274	$16,215	168	$82,467	85	$43,047	10	$292,925	11
Research institutes	212,228	153	8,740	79	62,907	60	35,927	9	104,654	5
FFRDC's	210,779	23	2,293	8	13,095	8	7,120	1	188,271	6
Science exhibitors	2,593	22	755	16	1,838	6	------	------	------	------
Societies and academies of science	5,476	56	2,818	50	2,658	6	------	------	------	------
Other nonprofit organizations	3,578	20	1,609	15	1,969	5	------	------	------	------

TABLE A–8. *Current expenditures for intramural R&D performance of independent nonprofit institutions, by type of organization and field of science, 1966*

[Thousands of dollars]

Type of organization	Total	Engineering	Physical sciences	Mathematical sciences	Life sciences	Psychological sciences	Social sciences
Total	$592,532	$207,661	$133,516	$44,002	$118,359	$17,378	$71,616
Research institutes	342,405	90,890	85,058	16,513	92,369	10,652	46,923
FFRDC's	213,950	114,270	44,098	26,845	7,232	2,464	19,041
Science exhibitors	8,403	----	1,051	2	5,942	------	1,408
Societies and academies of science	15,677	2,221	2,993	279	6,895	538	2,751
Private philanthropic foundations [a]	2,813	55	300	45	1,477	170	766
Other nonprofit organizations	9,284	225	16	318	4,444	3,554	727

[a] Field of science estimates were derived from related information : data were not requested.

TABLE A–9. *Current expenditures for intramural R&D performance of independent nonprofit institutions, by R&D expenditure size-class and field of science, 1966*[a]

[Thousands of dollars]

R&D expenditure size-class	Total	Engineering	Physical sciences	Mathematical sciences	Life sciences	Psychological sciences	Social sciences
Total	$592,532	$207,661	$133,516	$44,002	$118,359	$17,378	$71,616
Less than $500	37,735	2,312	3,325	285	20,999	3,197	7,617
$500 to $999	29,335	1,911	2,266	376	14,520	2,384	7,878
$1,000 to $4,999	122,658	17,240	18,924	7,675	48,464	9,522	20,833
$5,000 to $9,999	66,975	6,007	25,272	9,500	20,982	191	5,023
$10,000 or more	335,829	180,191	83,729	26,166	13,394	2,084	30,265

[a] Field of science estimate of $2.8 million expended by private philanthropic foundations was derived from related information; data were not requested.

TABLE A–10. *Current expenditures for intramural R&D performance and manpower characteristics of independent nonprofit institutions, by geographic division*

[Dollar amounts in thousands]

Georgraphic division	Total, 1966		Federal, 1966		Scientists and engineers employed, Jan. 1967	
	Amount	Percent distribution	Amount	Percent distribution	Number	Percent distribution
United States, total	$592,532	100.0	$434,654	100.0	22,144	100.0
Pacific	205,967	34.7	184.388	42.4	7,158	32.3
Middle Atlantic	105,689	17.8	58,999	13.6	4,676	21.1
East North Central	89,855	15.2	49,479	11.4	3,069	13.9
New England	66,381	11.2	59,541	13.7	2,288	10.3
South Atlantic	62,069	10.5	48,477	11.2	2,766	12.5
West South Central	24,631	4.2	13,479	3.1	812	3.7
West North Central	19,860	3.4	11,397	2.6	745	3.4
Mountain	10,719	1.8	4,386	1.0	270	1.2
East South Central	7,361	1.2	4,508	1.0	360	1.6

TABLE A–11. *Current expenditures for intramural R&D performance, and manpower characteristics of independent nonprofit institutions among the 15 States leading in R&D expenditures*

[Dollar amounts in thousands]

State	Total, 1966		Federal, 1966		Scientists and engineers employed, Jan. 1967	
	Amount	Cumulative percent distribution	Amount	Cumulative percent distribution	Number	Cumulative percent distribution
United States, total	$592,532	100.0	$434,654	100.0	22,144	100.0
California	167,841	28.3	148,097	34.1	6,213	28.1
New York	69,410	40.0	36,746	42.5	3,163	42.3
Massachusetts	62,923	50.7	57,127	55.7	2,107	51.9
Ohio	43,861	58.1	26,225	61.7	1,455	58.4
Washington	34,609	63.9	33,321	69.4	774	61.9
Illinois	33,233	69.5	19,270	73.8	1,010	66.5
Pennsylvania	31,753	74.9	20,542	78.5	1,276	72.2
Virginia	26,595	79.4	25,726	84.4	638	75.2
Texas	20,224	82.8	11,651	87.1	588	77.8
District of Columbia	19,923	86.1	10,332	89.5	1,355	83.9
Minnesota	9,744	87.8	4,233	90.5	273	85.1
Missouri	8,357	89.2	6,536	92.0	332	86.6
Maryland	7,974	90.5	7,562	93.7	363	88.3
Wisconsin	6,489	91.6	1,712	94.1	236	89.3
Michigan	6,001	92.6	2,184	94.6	332	90.8
All other States	43,595		23,390		2,029	

TABLE A–12. *Current expenditures for intramural and extramural R&D performance of independent nonprofit institutions, by type of organization, 1966* [a]

[Thousands of dollars]

Type of organization	Total	Intramural	Extramural				
				Within United States			
			Total	Total	Universities and colleges	Other	Foreign
Total	$673,932	$592,532	$81,400	$63,779	$52,744	$11,035	$17,621
Research institutes	345,584	342,405	3,179	2,912	2,104	808	267
FFRDC's	213,950	213,950	------	------	------	------	------
Science exhibitors	8,423	8,403	20	20	------	20	------
Societies and academies of science	20,806	15,677	5,129	4,814	3,834	980	315
Private philanthropic foundations	72,400	2,813	69,587	53,539	45,203	8,336	16,048
Other nonprofit organizations	12,769	9,284	3,485	2,494	1,603	891	991

[a] Extramural funds supporting R&D performance by other nonprofit institutions were reported as "intramural R&D performance" by the recipient institutions and, therefore, were excluded from "extramural" funds to avoid double counting.

TABLE A–13. *Current expenditures for medical and health-related intramural and extramural R&D performance of independent nonprofit institutions, by type of organization, 1966*

[Thousands of dollars]

Type of organization [a]	Total current medical and health-related R&D	Intramural	Extramural				
				Within United States			
			Total	Total	Universities and colleges	Other	Foreign
Total	$145,874	$113,689	$32,185	[b] $27,283	$20,219	$7,064	$4,902
Research institutes	98,363	97,824	539	510	390	120	29
FFRDC's	6,865	6,865	------	------	------	------	------
Science exhibitors	1,989	1,984	5	[b] 5	------	5	------
Private philanthropic foundations	30,397	570	29,827	25,573	18,730	6,843	4,254
Other nonprofit organizations	8,260	6,446	1,814	1,195	1,099	96	619

[a] Medical and health-related information was not obtained from societies and academies of science.

[b] Excludes foundations' extramural medical and health-related program expenditures to other private foundations, independent nonprofit research institutes, and other nonprofit organizations.

TABLE A–14. *Current expenditures for medical and health-related intramural R&D performance of independent nonprofit institutions, by type of organization and source of funds, 1966*

[Thousands of dollars]

Type of organization [a]	Current intramural medical and health-related R&D	Organizations' own funds	Federal Government	State and local governments	Other sources [b]
Total	$113,689	$21,718	$72,524	$1,728	$17,719
Research institutes	97,824	18,022	61,125	1,569	17,108
FFRDC's	6,865	19	6,846	------	------
Science exhibitors	1,984	686	1,167	41	90
Private philanthropic foundations	570	570	------	------	------
Other nonprofit organizations	6,446	2,421	3,386	118	521

[a] Medical and health-related information was not obtained from societies and academies of science.

[b] Mainly industry and private philanthropic foundations.

TABLE A–15. *Current expenditures for medical and health-related intramural R&D performance of independent nonprofit institutions, by type of organization and field of science, 1966*

[Thousands of dollars]

Type of organization [a]	Current intramural medical and health-related R&D	Engineering	Physical sciences	Mathematical sciences	Life sciences	Psychological sciences	Social sciences
Total	$113,689	$1,073	$9,077	$605	$93,842	$6,446	$2,076
Research institutes	97,824	848	9,034	425	81,162	4,427	1,928
FFRDC's	6,865	-----	-----	119	6,746	-----	-----
Science exhibitors	1,984	-----	43	----	1,856	-----	85
Private philanthropic foundations [b]	570	-----	-----	----	------	-----	-----
Other nonprofit organizations	6,446	225	-----	61	4,078	2,019	63

[a] Medical and health-related information was not obtained from societies and academies of science.

[b] Data by field of science were not collected for intramural medical and health-related research conducted by private philanthropic foundations.

TABLE A–16. *Selected manpower characteristics of research institutes, by R&D expenditure size-class, January 1967*

R&D expenditure size-class (thousands of dollars)	Number of institutions	Total employment	Total number of scientists and engineers	FTE number of scientists & engineers				Technicians		
				Total	Research & development		Other activities	Total	R&D	Other activities
					Total	Medical and health-related				
Total	233	30,577	12,732	12,127	10,488	3,406	1,639	4,944	4,329	615
Less than $500	151	2,948	1,064	945	917	552	28	532	485	47
$500 to $999	27	2,077	843	745	726	395	19	467	429	38
$1,000 to $4,999	41	9,512	3,438	3,293	3,276	1,608	17	1,260	1,256	4
$5,000 to $9,999	9	6,675	3,405	3,270	1,695	601	1,575	1,006	661	345
$10,000 or more	5	9,365	3,982	3,874	3,874	250	----	1,679	1,498	181

TABLE A–17. *Total and FTE number of scientists and engineers employed by research institutes, by occupational group and function, January 1967*

Occupational group	Total number	Full-time equivalent number			
		Total	R&D		Other activities
			Total	Medical and health-related	
Total	12,732	12,127	10,488	3,406	1,639
Engineers	2,735	2,657	2,538	67	119
Aeronautical engineers	168	167	166	3	1
Chemical engineers	305	300	296	3	4
Civil engineers	110	106	100	4	6
Electrical engineers	1,021	986	981	34	5
Industrial engineers	69	67	64	--	3
Mechanical engineers	616	595	590	12	5
Other engineers	446	436	341	11	95
Physical scientists	2,612	2,562	2,550	510	12
Chemists	1,325	1,294	1,286	435	8
Earth scientists	277	272	272	--	--
Physicists	714	704	701	71	3
Other physical scientists	296	292	291	4	1
Mathematicians	1,798	1,772	744	24	1,028
Life scientists	3,362	3,055	3,037	2,528	18
Agricultural scientists	54	54	53	3	1
Biological scientists	2,344	2,258	2,246	1,826	12
Medical scientists	964	743	738	699	5
Psychologists	1,047	1,002	558	205	444
Social psychologists	614	608	165	80	443
Other psychologists	433	394	393	125	1
Social scientists	1,178	1,079	1,061	72	18
Economists	699	633	619	13	14
Sociologists	98	92	90	26	2
Political scientists	157	151	151	2	--
Other social scientists	224	203	201	31	2

TABLE A–18. *Concentration of R&D activities among selected groups of research institutes with the largest R&D programs*

Research institutes ranked according to current expenditures for intramural R&D performance	Percent of total			
	Current intramural R&D, 1966		Capital intramural R&D, 1966	R&D scientists and engineers (FTE) Jan. 1967
	Total	Federal		
First 4	39.0	46.5	33.3	34.2
First 8	48.1	55.4	45.4	40.7
First 12	56.9	64.3	51.4	50.2
First 16	62.5	69.8	55.7	55.9
First 20	67.0	71.8	68.3	60.1
First 40	82.2	87.7	81.7	78.5
First 100	94.5	97.7	95.8	92.5

TABLE A–19. *Current expenditures for intramural R&D performance of research institutes, by source of funds and R&D expenditure size-class, 1966*

[Dollar amounts in thousands]

Source of funds	Total		R&D expenditure size-class									
	Total		Less than $500		$500 to $999		$1,000 to $4,999		$5,000 to $9,999		$10,000 or more	
	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent
Total	$342,405	100.0	$19,833	100.0	$19,700	100.0	$98,007	100.0	$59,855	100.0	$145,010	100.0
Organizations' own funds	47,558	13.9	6,713	33.8	8,307	42.2	22,317	22.8	8,113	13.6	2,108	1.5
Federal Government	212,228	62.0	8,740	44.1	8,134	41.3	54,773	55.9	35,927	60.0	104,654	72.2
Industry	58,149	17.0	1,369	6.9	1,106	5.6	8,517	8.7	9,278	15.5	37,879	26.1
State and local governments	3,597	1.1	689	3.5	323	1.6	1,896	1.9	564	.9	125	.1
Other sources	20,873	6.1	2,322	11.7	1,830	9.3	10,504	10.7	5,973	10.0	244	.2

TABLE A–20. *Current expenditures for medical and health-related intramural R&D performance of research institutes, by source of funds and R&D expenditure size-class, 1966*

[Dollar amounts in thousands]

Source of funds	Total		R&D expenditure size-class									
	Total		Less than $500		$500 to $999		$1,000 to $4,999		$5,000 to $9,999		$10,000 or more	
	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent
Total	$97,824	100.0	$11,705	100.0	$10,258	100.0	$43,384	100.0	$22,281	100.0	$10,196	100.0
Organizations' own funds	18,022	18.4	3,497	29.9	3,055	29.8	6,418	14.8	4,867	21.8	185	1.8
Federal Government	61,125	62.5	5,651	48.3	6,075	59.2	30,129	69.4	11,857	53.2	7,413	72.7
Industry	4,911	5.0	539	4.6	338	3.3	917	2.1	763	3.4	2,354	23.1
State and local governments	1,569	1.6	423	3.6	32	.3	1,049	2.4	65	.3	----	---
Other sources	12,197	12.5	1,595	13.6	758	7.4	4,871	11.2	4,729	21.2	244	2.4

TABLE A–21. *Current expenditures for intramural R&D performance of research institutes, by field of science, 1966*

[Dollar amounts in thousands]

Field of science	Total		Medical and health-related		Other	
	Amount	Percent	Amount	Percent	Amount	Percent
Total	$342,405	100.0	$97,824	100.0	$244,581	100.0
Engineering	90,890	26.5	848	.9	90,042	36.8
Physical sciences	85,058	24.8	9,034	9.2	76,024	31.1
Chemistry	30,926	9.0	7,397	7.6	23,529	9.6
Physics	26,673	7.8	1,581	1.6	25,092	10.3
Earth sciences	12,885	3.8	14	----	12,871	5.3
Other physical sciences	14,574	4.3	42	----	14,532	5.9
Mathematical sciences	16,513	4.8	425	.4	16,088	6.6
Life sciences	92,369	27.0	81,162	83.0	11,207	4.6
Agricultural	1,619	.5	----	----	1,619	.7
Biological	55,158	16.1	46,330	47.4	8,828	3.6
Medical	35,592	10.4	34,832	35.6	760	.3
Psychological sciences	10,652	3.1	4,427	4.5	6,225	2.5
Social psychology	2,681	.8	1,950	2.0	731	.3
Other psychology	7,971	2.3	2,477	2.5	5,494	2.2
Social sciences	46,923	13.7	1,928	2.0	44,995	18.4
Economics	24,187	7.1	291	.3	23,896	9.8
Sociology	3,595	1.0	1,039	1.1	2,556	1.0
Political science	4,218	1.2	----	----	4,218	1.7
Other social sciences	14,923	4.4	598	.6	14,325	5.9

TABLE A–22. *Selected characteristics of intramural R&D activities of research institutes, by R&D expenditure size-class*

R&D expenditure size-class (thousands of dollars)	Number of R&D scientists and engineers, (FTE) Jan. 1967	Average expenditures per R&D scientist or engineer, (FTE) 1966	Thousands of dollars						
			Current intramural R&D expenditures, 1966	Engineering	Physical sciences	Mathematical sciences	Life sciences	Psychological sciences	Social sciences
Total	10,488	$32,650	$342,405	$90,890	$85,058	$16,513	$92,369	$10,652	$46,923
Less than $500	917	21,600	19,833	1,191	1,986	----	12,140	1,794	2,722
$500 to $999	726	27,130	19,700	1,861	1,791	192	10,057	1,772	4,027
$1,000 to $4,999	3,276	29,920	98,007	15,152	16,166	2,268	40,177	6,139	18,105
$5,000 to $9,999	1,695	35,310	59,855	4,368	23,706	7,008	20,911	49	3,813
$10,000 or more	3,874	37,430	145,010	68,318	41,409	7,045	9,084	898	18,256

TABLE A–23. *Total and FTE number of scientists and engineers employed by FFRDC's administered by nonprofit institutions, by occupational group and function, January 1967*

Occupational group	Total number	Full-time-equivalent number			
		Total	R&D		Other activities
			Total	Medical and health-related	
Total	5,495	5,356	5,286	136	70
Engineers	2,708	2,684	2,650	16	34
Aeronautical engineers	311	311	311	---	--
Chemical engineers	178	177	168	10	9
Civil engineers	63	63	60	---	3
Electrical engineers	1,157	1,146	1,140	1	6
Industrial engineers	35	35	35	---	--
Mechanical engineers	540	538	526	2	12
Other engineers	424	414	410	3	4
Physical scientists	1,031	1,007	987	46	20
Chemists	262	247	234	21	13
Earth scientists	42	42	42	4	--
Physicists	574	570	563	16	7
Other physical scientists	153	148	148	5	--
Mathematicians	700	695	695	---	--
Life scientists	84	83	83	69	--
Agricultural scientists	6	6	6	5	--
Biological scientists	40	39	39	28	--
Medical scientists	38	38	38	36	--
Psychologists	133	121	121	---	--
Social psychologists	19	17	17	---	--
Other psychologists	114	104	104	---	--
Social scientists	839	766	750	5	16
Economists	199	198	198	---	--
Sociologists	50	47	47	5	--
Political scientists	80	80	80	---	--
Other social scientists	510	441	[a] 425	---	16

[a] Includes 200 educators performing research and development in the educational laboratories established by the U.S. Office of Education.

TABLE A–24. *Total expenditures for scientific activities of societies and academies of science, by type of activity and total expenditure size-class, 1966*

[Dollar amounts in thousands]

Type of activity	Total		Total expenditure size-class							
			Less than $500		$500 to $999		$1,000 to $4,999		$5,000 or more	
	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent
Total	$269,450	100.0	$35,142	13.0	$23,300	8.6	$87,246	32.4	$123,762	45.9
Scientific and technical information [a]	107,118	100.0	14,863	13.9	10,799	10.1	32,580	30.4	48,876	45.6
Research and development	21,532	100.0	4,021	18.7	1,893	8.8	8,481	39.4	7,137	33.1
Intramural	15,677	100.0	2,817	18.0	1,389	8.9	7,349	46.9	4,122	26.3
Extramural [b]	5,855	100.0	1,204	20.6	504	8.6	1,132	19.3	3,015	51.5
Other activities	140,800	100.0	16,258	11.5	10,608	7.5	46,185	32.8	67,749	48.1

[a] To avoid double counting, $2.9 million expended for research and development on scientific communication and documentation are included under R&D expenditures rather than under scientific and technical information expenditures.

[b] Does not include $217,000 granted to other societies and academies of science for the performance of research and development.

TABLE A–25. *Expenditures for scientific and technical information activities of societies and academies of science, by type of activity and membership size-class, 1966*

[Dollar amounts in thousands]

Type of activity	Total	Membership size-class		
		Less than 1,000	1,000 to 24,999	25,000 or more
Total [a]	$110,064	$20,309	$32,371	$57,384
Publication and distribution	78,315	6,516	24,449	47,350
Library science information centers and other reference services	7,046	1,571	2,120	3,355
Scientific symposia and technical meetings	21,757	12,134	5,281	4,342
R&D projects on scientific communication and documentation	2,946	88	521	2,337

[a] Includes $2.9 million expended for research and development on scientific communication and documentation which, to avoid double counting, was included in appendix table A-24 under R&D expenditures.

TABLE A–26. *States leading in expenditures for scientific and technical information activities of societies and academies of science in 1966*

State	Total (thousands of dollars)	Cumulative percent distribution
United States, total	$110,064	100.0
District of Columbia	37,502	34.1
New York	23,296	55.2
Illinois	23,151	76.3
Pennsylvania	6,490	82.2
Michigan	4,860	86.6
Maryland	3,122	89.4
California	2,955	92.1
Ohio	1,118	93.1
Rhode Island	971	94.0
Texas	853	94.8
Massachusetts	754	95.5
Minnesota	609	96.0
Oklahoma	609	96.6
Connecticut	585	97.1
Florida	498	97.6
All other States	2,691	----

TABLE A–27. *Research expenditures of private philanthropic foundations, by type of expenditure and asset size-class, 1966*

[Thousands of dollars]

Type of research expenditure	Total	Asset size-class		
		Less than $10,000	$10,000 to $99,999	$100,000 or more
Total	$91,787	$11,421	$15,821	$64,545
Medical and health-related research	39,250	9,517	6,575	23,158
Other research activities	52,537	1,904	9,246	41,387
Current expenditures	74,378	9,894	15,217	49,267
Medical and health-related research	35,460	8,308	6,254	20,898
Other research activities	38,918	1,586	8,963	28,369
Capital expenditures	15,883	1,202	371	14,310
Medical and health-related research	3,447	916	271	2,260
Other research activities	12,436	286	100	12,050
Endowments	1,526	325	233	968
Medical and health-related research	343	293	50	------
Other research activities	1,183	32	183	968

TABLE A–28. *Concentration of research expenditures among private philanthropic foundations with the largest research programs, by type of expenditure, 1966*

[Dollar amounts in thousands]

Type of research expenditure	Total research expenditures, all foundations	Percent of total				
		First 3	First 8	First 20	First 40	First 100
Total	$91,787	60.5	74.2	82.4	87.8	92.6
Current expenditures	74,378	57.0	71.9	81.1	86.6	91.7
Capital expenditures	15,883	76.5	86.0	90.3	94.8	96.9
Endowments	1,526	63.4	63.4	63.4	72.8	95.8
Intramural research	2,813	88.2	94.6	98.7	98.7	100.0
Extramural research	88,974	59.6	73.6	81.9	87.5	92.4
United States	72,926	53.6	70.4	78.6	85.1	90.8
Universities and colleges	45,203	56.6	76.8	82.0	87.5	92.1
Other recipients	27,723	48.6	59.8	73.0	81.1	88.6
Foreign	16,048	87.0	88.2	96.8	98.2	99.8

TABLE A–29. *Research expenditures, including medical and health-related research of private philanthropic foundations, by recipient, 1966*

[Dollar amounts in thousands]

Type of recipient	Total research expenditures		Medical and health-related research		Other research activities	
	Amount	Percent distribution	Amount	Percent distribution	Amount	Percent distribution
Total	$91,787	100.0	$39,250	100.0	$52,537	100.0
Intramural research	2,813	3.1	570	1.5	2,243	4.3
Extramural research	88,974	96.9	38,680	98.5	50,294	95.7
United States	72,926	79.5	34,426	87.7	38,500	73.3
Universities and colleges	45,203	49.2	18,730	47.7	26,473	50.4
Nonprofit hospitals	5,806	6.3	5,803	14.8	3	----
Research institutes	12,094	13.2	6,266	16.0	5,828	11.1
Other nonprofit organizations	6,131	6.7	1,713	4.4	4,418	8.4
Individuals	2,013	2.2	822	2.1	1,191	2.3
Other	1,679	1.8	1,092	2.8	587	1.1
Foreign countries	16,048	17.5	4,254	10.8	11,794	22.4

TABLE A–30. *Current research expenditures of private philanthropic foundations, by field of science and asset size-class, 1966*

[Thousands of dollars]

Field of science	Total research expenditures	Asset size-class		
		Less than $10,000	$10,000 to $99,999	$100,000 or more
Total	$74,378	$9,894	$15,217	$49,267
Medical and health-related research	35,460	8,308	6,254	20.898
Other research activities	38,918	1,586	8,963	28,369
Engineering	844	110	67	667
Medical and health-related research	14	----	14	-----
Other research activities	830	110	53	667
Mathematical and physical sciences	10,176	217	5,973	3,986
Medical and health-related research	48	12	-----	36
Other research activities	10,128	205	5,973	3,950
Life sciences	40,404	7,596	6,531	26,277
Medical and health-related research	32,589	7,131	5,877	19,581
Other research activities	7,815	465	654	6,696
Psychological sciences	2,344	939	227	1,178
Medical and health-related research	2,259	930	217	1,112
Other research activities	85	9	10	66
Social sciences	20,610	1,032	2,419	17,159
Medical and health-related research	550	235	146	169
Other research activities	20,060	797	2,273	16,990

TABLE A–31. *Expenditures for education in the sciences by private philanthropic foundations, by type of support and asset size-class, 1966*

[Thousands of dollars]

Type of support	Total	Asset size-class: Less than $10,000	Asset size-class: $10,000 to $99,999	Asset size-class: $100,000 or more
Total	$108,342	$18,308	$29,223	$60,811
Medical and health-related education	33,754	10,280	10,282	13,192
Other science education fields	74,588	8,028	18,941	47,619
Current expenditures	46,219	7,081	3,370	35,768
Medical and health-related education	12,032	4,249	1,491	6,292
Other science-education fields	34,187	2,832	1,879	29,476
Capital expenditures	26,292	3,436	11,719	11,137
Medical and health-related education	12,473	2,209	4,659	5,605
Other science-education fields	13,819	1,227	7,060	5,532
Endowments	4,518	488	3,105	925
Medical and health-related education	1,956	150	1,781	25
Other science-education fields	2,562	338	1,324	900
Fellowships, scholarships, etc.	31,313	7,303	11,029	12,981
Medical and health-related education	7,293	3,672	2,351	1,270
Other science-education fields	24,020	3,631	8,678	11,711

TABLE A–32. *Total expenditures of private philanthropic foundations, by program and asset size-class, 1966*

[Dollar amounts in thousands]

Type of program	Total expenditures: Amount	Total expenditures: Percent	Asset size-class: Less than $10,000	Asset size-class: $10,000 to $99,999	Asset size-class: $100,000 or more
Total	$666,560	100.0	$93,211	$111,282	$462,067
Scientific activities, total	204,438	30.7	30,951	45,739	127,748
Research	91,787	13.8	11,421	15,821	64,545
Education in the sciences	108,342	16.3	18,308	29,223	60,811
Other	4,309	.6	1,222	695	2,392
Nonscientific activities, total[a]	445,689	66.9	60,811	61,957	322,921
Health and welfare	74,235	11.1	20,407	22,334	31,494
Humanities	95,748	14.4	10,571	9,207	75,970
International activities	51,113	7.7	818	766	49,529
Education	198.368	29.8	21,115	19,537	157,716
Other areas of support	26,225	3.9	7,900	10,113	8,212
Administrative and operating expenditures[b]	16,433	2.5	1,449	3,586	11,398

[a] Expenditures shown for nonscientific programs are funds from foundations with scientific activities and are not representative of expenditures of all private philanthropic foundations.

[b] Expenditures associated with all of the above programs.

APPENDIX B

Technical Notes

Survey Coverage

The 1966 survey obtained data on the financial and manpower resources devoted to the advancement of science and technology. Organizations covered by the survey included research institutes; Federally Funded Research and Development Centers (FFRDC's) administered by nonprofit institutions; science exhibitors, such as science museums, zoological parks, botanical gardens, and arboretums; societies and academies of science; private philanthropic foundations; and other nonprofit institutions (including organizations such as the Educational Testing Service and Population Council) with R&D programs that could not be classified into any of the above categories.[1]

With the exception of private philanthropic foundations and professional and technical societies, all institutions in these categories that were known or believed to have science programs were included in the survey. Several sources were used to compile the mailing list of such organizations, including: (1) previous surveys conducted by the National Science Foundation, (2) *Research Centers Directory,*[2] (3) *Museums Directory of the United States and Canada,*[3] (4) *Encyclopedia of Associations,*[4] (5) *Scientific and Technical Societies of the United States and Canada,*[5] (6) *The Foundation Directory,* edition 3,[6] and other listings, including the names of professional and technical societies obtained from the National Academy of Sciences. From these sources the names of 1,148 nonprofit institutions were selected for inclusion in the survey.

Usable replies were received from 83 percent of the canvassed organizations (appendix table B–1). Included in the $674 million for total current R&D performance was an estimated $30 million for total and item nonresponse. (See appendix table A–12.) This estimate was based on information contained in the source documents mentioned above and, where available, individual annual reports.

Excluded from the canvass were both small societies that reported less than $50,000 in total expenditures in the 1964 survey[7] and private philanthropic foundations with assets of under $1 million that were not believed to significantly support scientific activities. Estimates for these organizations were primarily based upon the 1964 survey returns and the above-mentioned source material.

---

[1] Nonprofit hospitals and health agencies were not surveyed. However, estimates of the R&D expenditures and the employment of R&D scientists and engineers of these organizations are included in the *Summary* and the trend data presented in section 2 of the report.

[2] Archie M. Palmer and Anthony T. Kruzas, eds., *Research Centers Directory*. Detroit: Gale Research Company, 1965.

[3] American Association of Museums, *Museums Directory of the United States and Canada*, Erwin O. Christensen, ed. Washington, D.C., 1961.

[4] Ruffner, Thomas, Underwood & Young, eds., *Encyclopedia of Associations*, vol. I. Detroit: Gale Research Company, 1964.

[5] National Academy of Sciences—National Research Council, *Scientific and Technical Societies of the United States and Canada*. Washington, D.C., 1961.

[6] The Foundation Library Center, *The Foundation Directory*. New York: The Russell Sage Foundation, 1967.

[7] National Science Foundation, *Scientific Activities of Nonprofit Institutions, 1964*. Washington, D.C., 20402: Supt. of Documents, U.S. Government Printing Office, 1967.

Definitions were unchanged from the 1964 study although new interpretations of data have been made in some cases to improve uniformity of response within the existing definitions. Attention is called to Scope of Survey and Limitations of Data in the *Introduction* which discusses the survey technique and the difficulties encountered in identifying scientific activities.

Methodology of Survey

Three separate types of questionnaires, each designed to obtain relevant information on the principal scientific activities of the surveyed institutions, were used in the survey. Form 9D–13a was mailed to research institutes, FFRDC's administered by nonprofit institutions, science exhibitors, and "other" nonprofit institutions. Form 9D–13b was sent to societies and academies of sciences and Form 9D–13c was mailed to private philanthropic foundations.

The initial mail-out was conducted on April 3, 1967. Nonrespondents were followed up by mail on May 10, 1967. All remaining nonrespondents considered to have significant expenditures for scientific activities were followed up by telephone. In addition, 15 newly classified FFRDC's funded by the U.S. Office of Education were canvassed on November 21, 1967.

TABLE B–1. *Response to the survey of scientific activities of independent nonprofit institutions, by type of institution and institutions reporting science programs, 1966*

Type of institution	Total number surveyed	Number of respondents		
		Total	Percent of number surveyed	Number with science programs [a]
Total	1,148	956	83.3	826
Research institutes	302	269	89.1	233
FFRDC's	24	24	100.0	24
Science exhibitors	65	51	78.5	48
Societies and academies of science	306	248	81.0	241
Private philanthropic foundations	345	273	79.1	239
Other nonprofit organizations	106	91	85.8	41

[a] Includes estimates for nonresponse.

APPENDIX C

Covering Letter, Questionnaires, and Instructions

Page
Cover Letter 57
Composite Questionnaires for Selected Types of Institutions:
  Research institutes (NSF Form 9D–13a) 58
  FFRDC's (NSF Form 9D–13a) 61
  Science exhibitors (NSF Form 9D–13a) 64
  "Other" nonprofit institutions (NSF Form 9D–13a) 67
  Societies and academies of science (NSF Form 9D–13b) 70
  Private philanthropic foundations (NSF Form 9D–13c) 72
Instruction Sheet, NSF Form 9D–13a[1] 75

---

[1] The Instruction Sheets for NSF Forms 9D–13b and 9D–13c, respectively, are not reproduced here, since most of the instructions and definitions applicable to NSF Form 9D–13a also apply to these two survey questionnaires.

NATIONAL SCIENCE FOUNDATION
OFFICE OF THE DIRECTOR
WASHINGTON, D.C. 20550

April 3, 1967

Gentlemen:

The National Science Foundation requests your cooperation in its Survey of Scientific Activities in Scientific and Technical Societies and Academies of Science During 1966. This survey is part of a comprehensive program of studies to obtain information pertaining to the economic resources utilized in the Nation's scientific endeavors from all sectors of the economy.

The enclosed questionnaire requests information on expenditures for research, development, and scientific and technical information activities and on the employment of scientific personnel associated with these activities. Such information is used by the National Science Foundation, other Federal departments and agencies, and private organizations to determine the magnitude of the Nation's scientific efforts and to assist in the formulation of policies to strengthen science and technology.

If you have any questions regarding the survey, please contact William Stewart (Area Code 202, 343-8721) at the Foundation's Office of Economic and Manpower Studies.

Your cooperation in this matter will be greatly appreciated. A copy of the published report on the survey will be furnished to you upon request.

Sincerely yours,

Leland J. Haworth

Leland J. Haworth
Director

Enclosures

APPENDIX C

Budget Bureau No. 99-67002
Approval Expires: Dec. 1967

SURVEY OF SCIENTIFIC ACTIVITIES
OF
NONPROFIT INSTITUTIONS DURING 1966

All completed forms and correspondence covering this survey should be addressed to:

Independent Nonprofit Institutions Survey
National Science Foundation
Washington, D.C. 20550

NAME AND ADDRESS OF ORGANIZATION *(Please correct if name or address has changed)*

Research Institutes and Operating
Foundations

(PLEASE RETURN THIS COPY)

This survey questionnaire is designed to obtain statistical data relating to: (1) current and capital expenditures for research and development; (2) scientific and engineering personnel. Where exact data are not available reasonable estimates are acceptable. *Insert "0" where appropriate rather than leave a blank space.* Organizations are requested to complete and return this form in the enclosed envelope within 30 days.

The data requested in this questionnaire will be published as statistical totals or aggregates for all institutions or for selected groups of institutions. In certain instances, however, the National Science Foundation may wish to publish selected survey data with the institution identified. Please indicate below the number of any item that should not be published with institutional identification: ____________________

PLEASE READ THE ENCLOSED INSTRUCTIONS BEFORE COMPLETING THIS FORM

SECTION I – GENERAL DATA

Item 1	Number of full-time and part-time paid employees in all activities of your organization during the mid-January pay period, 1967	JANUARY 1967 30,577
Item 2	Total expenditures by your organization for all activities during the 1966 accounting period *(Include funds received from all sources.)*	1966 *(Thousands of Dollars)* $ 452,024

SECTION II – EXPENDITURES FOR RESEARCH AND DEVELOPMENT PERFORMED WITHIN YOUR ORGANIZATION

Item 3

COST OF RESEARCH AND DEVELOPMENT PERFORMED WITHIN THE ORGANIZATION, INCLUDING DEPRECIATION, BY MAJOR TYPE AND SOURCE OF FUNDS* *(Please see instructions)*	1966 *(Thousands of Dollars)* TOTAL R&D (1)	MEDICAL AND HEALTH-RELATED R&D (2)	OTHER R&D FUNDS (3)
1. Organization's own funds	$ 47,558	$ 18,022	$ 29,536
2. Federal Government	212,228	61,125	151,103
3. Industry	58,149	4,911	53,238
4. State and local governments	3,597	1,569	2,028
5. Other sources	20,873	12,197	8,676
6. Total *(Sum of 1 to 5)*	$ 342,405	$ 97,824	$ 244,581

*Exclude all R&D subcontracted to others. Note that Item 3 should exclude R&D financed by your organization but performed by others. Such R&D funds should be reported in Item 6. Report only current operating expenses for R&D in Item 3. Capital expenditures should be reported in Item 5.

Item 4

FIELDS OF RESEARCH AND DEVELOPMENT - Of funds reported for research and development above, please estimate the cost for the following fields:	1966 *(Thousands of Dollars)* TOTAL R&D (1)	MEDICAL AND HEALTH-RELATED R&D (2)	OTHER R&D FUNDS (3)
10. Engineering (total)	$ 90,890	$ 848	$ 90,042
20. Physical sciences (total)	85,058	9,034	76,024
21. Chemistry	30,926	7,397	23,529
22. Earth sciences	12,885	14	12,871
23. Physics	26,673	1,581	25,092
24. Other physical sciences	14,574	42	14,532
30. Mathematical sciences	16,513	425	16,088
40. Life sciences (total)	92,369	81,162	11,207
41. Agricultural sciences	1,619	-	1,619
42. Biological sciences	55,158	46,330	8,828
43. Medical sciences	35,592	34,832	760
50. Psychological sciences (total)	10,652	4,427	6,225
51. Social psychology	2,681	1,950	731
52. Other psychology	7,971	2,477	5,494
60. Social sciences (total)	46,923	1,928	44,995
61. Economics	24,187	291	23,896
62. Sociology	3,595	1,039	2,556
63. Political science	4,218	-	4,218
64. Other social sciences	14,923	598	14,325
70. Other sciences *(specify)*:			
71. ____________________			
72. ____________________			
73. ____________________			
80. Total* *(Sum of 10 to 73)*	$ 342,405	$ 97,824	$ 244,581

*Note that totals reported in Item 4-80, columns 1, 2 and 3, should be the same as the totals reported in Item 3-6, columns 1, 2 and 3.

NSF Form 9D-13a, Feb. 1967

SECTION II – EXPENDITURES FOR RESEARCH AND DEVELOPMENT PERFORMED WITHIN YOUR ORGANIZATION (Continued)

Item 5		1966 (*Thousands of Dollars*) TOTAL R&D (1)	MEDICAL AND HEALTH-RELATED R&D (2)	OTHER R&D FUNDS (3)
	CAPITAL EXPENDITURES FOR RESEARCH AND DEVELOPMENT PERFORMED WITHIN YOUR ORGANIZATION (*Exclude depreciation*)	$ 27,382	$ 13,307	$ 14,075

SECTION III – EXPENDITURES BY YOUR ORGANIZATION FOR RESEARCH AND DEVELOPMENT PERFORMED BY OTHER ORGANIZATIONS, BY TYPE OF RECIPIENT

Item 6	**RECIPIENTS OF OUTSIDE FINANCING** (*Exclude subcontracts*)	1966 (*Thousands of Dollars*) TOTAL R&D (1)	MEDICAL AND HEALTH-RELATED R&D (2)	OTHER R&D FUNDS (3)
	10. Within the United States (total)	$ 3,494	$ 579	$ 2,915
	11. Universities and colleges (*including affiliated hospitals*)	2,104	390	1,714
	12. Other nonprofit organizations	582	69	513
	13. Other recipients, including individuals	808	120	688
	20. Outside the United States	267	29	238
	30. Total (*Sum of 10 and 20*)	$ 3,761	$ 608	$ 3,153

SECTION IV – SCIENTIFIC AND ENGINEERING PERSONNEL

Item 7	**SCIENTISTS AND ENGINEERS**--The number of scientific and engineering personnel employed (paid) by your organization, by field and function, January 1967. (*Please see instructions.*)	JANUARY 1967 NUMBER EMPLOYED FULL-OR PART-TIME (1)	FULL-TIME EQUIVALENTS, BY FUNCTION TOTAL (2)	RESEARCH AND DEVELOPMENT TOTAL R&D (3)	MEDICAL AND HEALTH-RELATED R&D (4)	OTHER SCIENTIFIC AND ENGINEERING ACTIVITIES (5)
	10. Engineers (total)	2,735	2,657	2,538	67	119
	11. Aeronautical engineers	168	167	166	3	1
	12. Chemical engineers	305	300	296	3	4
	13. Civil engineers	110	106	100	4	6
	14. Electrical engineers	1,021	986	981	34	5
	15. Industrial engineers	69	67	64	-	3
	16. Mechanical engineers	616	595	590	12	5
	17. Other engineers	446	436	341	11	95
	20. Physical scientists (total)	2,612	2,562	2,550	510	12
	21. Chemists	1,325	1,294	1,286	435	8
	22. Earth scientists	277	272	272	-	-
	23. Physicists	714	704	701	71	3
	24. Other physical scientists	296	292	291	4	1
	30. Mathematicians (total)	1,798	1,772	744	24	1,028
	40. Life scientists (total)	3,362	3,055	3,037	2,528	18
	41. Agricultural scientists	54	54	53	3	1
	42. Biological scientists	2,344	2,258	2,246	1,826	12
	43. Medical scientists (exclude practitioners)	964	743	738	699	5
	50. Psychologists (total)	1,047	1,002	558	205	444
	51. Social psychologist	614	608	165	80	443
	52. Other psychologists	433	394	393	125	1
	60. Social scientists (total)	1,178	1,079	1,061	72	18
	61. Economists	699	633	619	13	14
	62. Sociologists	98	92	90	26	2
	63. Political scientists	157	151	151	2	-
	64. Other social scientists	224	203	201	31	2
	70. Other scientists (specify):					
	71. ______					
	72. ______					
	73. ______					
	80. *Total (Sum of 10 to 73)*	12,732	12,127	10,488	3,406	1,639

APPENDIX C

Item	Number of scientists and engineers, by highest earned degree and function, January 1967	NUMBER EMPLOYED FULL- OR PART-TIME	FULL-TIME EQUIVALENTS, BY FUNCTION			
			TOTAL	RESEARCH AND DEVELOPMENT		OTHER SCIENTIFIC AND ENGINEERING ACTIVITIES
				TOTAL R&D	MEDICAL AND HEALTH-RELATED R&D	
		(1)	(2)	(3)	(4)	(5)
8	1. Ph.D. or Sc.D.	3,191	3,045	2,951	1,043	94
	2. M.D., D.D.S., D.V.M., D.O., O.D., D.S.C.	822	650	650	622	-
	3. Master	2,980	2,864	2,608	433	256
	4. Bachelor or the equivalent	5,739	5,568	4,279	1,308	1,289
	5. Total* *(Sum of 1 to 4)*	12,732	12,127	10,488	3,406	1,639

***Note that total reported in Item 8-5, column 1, should be the same as the total reported in Item 7-80, column 1. Similarly, totals reported in Item 8-5, columns 2 through 5, should be the same as totals reported in Item 7-80, columns 2 through 5, respectively.**

Item	**TECHNICIANS** - Number of persons employed (paid) by your organization working as technicians, by field and function in which primarily employed, January 1967	PRIMARY FUNCTION – JANUARY 1967		
		TOTAL	R&D	OTHER SCIENTIFIC AND ENGINEERING ACTIVITIES
		(1)	(2)	(3)
9	1. Engineering and physical science technicians	2,221	2,128	93
	2. Life science technicians	1,803	1,714	89
	3. Social science technicians	233	226	7
	4. Other technicians	687	261	426
	5. Total *(Sum of 1 to 4)*	4,944	4,329	615

REMARKS:

IDENTITY OF OFFICIAL COMPLETING THIS FORM

NAME OF PERSON				NAME AND ADDRESS OF ORGANIZATION *(Number, Street, City, State, ZIP Code)*
TITLE				
TELEPHONE NO.	AREA CODE	EXTENSION	DATE	

GPO 919-855

Budget Bureau No. 99-67002
Approval Expires: Dec. 1967

SURVEY OF SCIENTIFIC ACTIVITIES OF NONPROFIT INSTITUTIONS DURING 1966

All completed forms and correspondence covering this survey should be addressed to:

Independent Nonprofit Institutions Survey
National Science Foundation
Washington, D.C. 20550

NAME AND ADDRESS OF ORGANIZATION *(Please correct if name or address has changed)*

Federally Funded Research and
Development Centers

(PLEASE RETURN THIS COPY)

This survey questionnaire is designed to obtain statistical data relating to: (1) current and capital expenditures for research and development; (2) scientific and engineering personnel. Where exact data are not available reasonable estimates are acceptable. *Insert "0" where appropriate rather than leave a blank space.* Organizations are requested to complete and return this form in the enclosed envelope within 30 days.

The data requested in this questionnaire will be published as statistical totals or aggregates for all institutions or for selected groups of institutions. In certain instances, however, the National Science Foundation may wish to publish selected survey data with the institution identified. Please indicate below the number of any item that should not be published with institutional identification: ____________________

PLEASE READ THE ENCLOSED INSTRUCTIONS BEFORE COMPLETING THIS FORM

SECTION I – GENERAL DATA

		JANUARY 1967
Item 1	Number of full-time and part-time paid employees in all activities of your organization during the mid-January pay period, 1967	13,203
		1966 *(Thousands of Dollars)*
Item 2	Total expenditures by your organization for all activities during the 1966 accounting period *(Include funds received from all sources.)*	$ 230,520

SECTION II – EXPENDITURES FOR RESEARCH AND DEVELOPMENT PERFORMED WITHIN YOUR ORGANIZATION

Item 3

COST OF RESEARCH AND DEVELOPMENT PERFORMED WITHIN THE ORGANIZATION, INCLUDING DEPRECIATION, BY MAJOR TYPE AND SOURCE OF FUNDS* *(Please see instructions)*	1966 *(Thousands of Dollars)* TOTAL R&D (1)	MEDICAL AND HEALTH-RELATED R&D (2)	OTHER R&D FUNDS (3)
1. Organization's own funds	$ 2,126	$ 19	$ 2,107
2. Federal Government	210,779	6,846	203,933
3. Industry	450	-	450
4. State and local governments	519	-	519
5. Other sources	76	-	76
6. Total *(Sum of 1 to 5)*	$213,950	$ 6,865	$ 207,085

*Exclude all R&D subcontracted to others. Note that Item 3 should exclude R&D financed by your organization but performed by others. Such R&D funds should be reported in Item 6. Report only current operating expenses for R&D in Item 3. Capital expenditures should be reported in Item 5.

Item 4

FIELDS OF RESEARCH AND DEVELOPMENT - Of funds reported for research and development above, please estimate the cost for the following fields:	1966 *(Thousands of Dollars)* TOTAL R&D (1)	MEDICAL AND HEALTH-RELATED R&D (2)	OTHER R&D FUNDS (3)
10. Engineering (total)	$ 114,270	$ -	$ 114,270
20. Physical sciences (total)	44,098	-	44,098
21. Chemistry	7,004	-	7,004
22. Earth sciences	2,971	-	2,971
23. Physics	22,114	-	22,114
24. Other physical sciences	12,009	-	12,009
30. Mathematical sciences	26,845	119	26,726
40. Life sciences (total)	7,232	6,746	486
41. Agricultural sciences	100	-	100
42. Biological sciences	4,257	3,914	343
43. Medical sciences	2,875	2,832	43
50. Psychological sciences (total)	2,464	-	2,464
51. Social psychology	471	-	471
52. Other psychology	1,993	-	1,993
60. Social sciences (total)	19,041	-	19,041
61. Economics	5,825	-	5,825
62. Sociology	1,022	-	1,022
63. Political science	2,454	-	2,454
64. Other social sciences	9,740	-	9,740
70. Other sciences *(specify)*:			
71. ________			
72. ________			
73. ________			
80. Total* *(Sum of 10 to 73)*	$ 213,950	$ 6,865	$ 207,085

*Note that totals reported in Item 4-80, columns 1, 2 and 3, should be the same as the totals reported in Item 3-6, columns 1, 2 and 3.

NSF Form 9D-13a, Feb. 1967

SECTION II – EXPENDITURES FOR RESEARCH AND DEVELOPMENT PERFORMED WITHIN YOUR ORGANIZATION (Continued)

Item 5		1966 (*Thousands of Dollars*)		
		TOTAL R&D (1)	MEDICAL AND HEALTH-RELATED R&D (2)	OTHER R&D FUNDS (3)
	CAPITAL EXPENDITURES FOR RESEARCH AND DEVELOPMENT PERFORMED WITHIN YOUR ORGANIZATION *(Exclude depreciation)*	$ –	$ –	$ –

SECTION III – EXPENDITURES BY YOUR ORGANIZATION FOR RESEARCH AND DEVELOPMENT PERFORMED BY OTHER ORGANIZATIONS, BY TYPE OF RECIPIENT

Item 6	RECIPIENTS OF OUTSIDE FINANCING *(Exclude subcontracts)*	1966 (*Thousands of Dollars*)		
		TOTAL R&D (1)	MEDICAL AND HEALTH-RELATED R&D (2)	OTHER R&D FUNDS (3)
	10. Within the United States (total)	$ –	$ –	$ –
	11. Universities and colleges *(including affiliated hospitals)*	–	–	–
	12. Other nonprofit organizations	–	–	–
	13. Other recipients, including individuals	–	–	–
	20. Outside the United States	–	–	–
	30. Total *(Sum of 10 and 20)*	$ –	$ –	$ –

SECTION IV – SCIENTIFIC AND ENGINEERING PERSONNEL

Item 7	SCIENTISTS AND ENGINEERS--The number of scientific and engineering personnel employed (paid) by your organization, by field and function, January 1967. *(Please see instructions.)*	JANUARY 1967				
		NUMBER EMPLOYED FULL-OR PART-TIME (1)	FULL-TIME EQUIVALENTS, BY FUNCTION			
			TOTAL (2)	RESEARCH AND DEVELOPMENT		OTHER SCIENTIFIC AND ENGINEERING ACTIVITIES (5)
				TOTAL R&D (3)	MEDICAL AND HEALTH-RELATED R&D (4)	
	10. Engineers (total)	2,708	2,684	2,650	16	34
	11. Aeronautical engineers	311	311	311	-	-
	12. Chemical engineers	178	177	168	10	9
	13. Civil engineers	63	63	60	-	3
	14. Electrical engineers	1,157	1,146	1,140	1	6
	15. Industrial engineers	35	35	35	-	-
	16. Mechanical engineers	540	538	526	2	12
	17. Other engineers	424	414	410	3	4
	20. Physical scientists (total)	1,031	1,007	987	46	20
	21. Chemists	262	247	234	21	13
	22. Earth scientists	42	42	42	4	-
	23. Physicists	574	570	563	16	7
	24. Other physical scientists	153	148	148	5	-
	30. Mathematicians (total)	700	695	695	-	-
	40. Life scientists (total)	84	83	83	69	-
	41. Agricultural scientists	6	6	6	5	-
	42. Biological scientists	40	39	39	28	-
	43. Medical scientists (exclude practitioners)	38	38	38	36	-
	50. Psychologists (total)	133	121	121	-	-
	51. Social psychologist	19	17	17	-	-
	52. Other psychologists	114	104	104	-	-
	60. Social scientists (total)	839	766	750	5	16
	61. Economists	199	198	198	-	-
	62. Sociologists	50	47	47	5	-
	63. Political scientists	80	80	80	-	-
	64. Other social scientists	510	441	425	-	16
	70. Other scientists (specify):					
	71.______					
	72.______					
	73.______					
	90. *Total (Sum of 10 to 73)*	5,495	5,356	5,286	136	70

Item 8	Number of scientists and engineers, by highest earned degree and function, January 1967	NUMBER EMPLOYED FULL- OR PART-TIME	FULL-TIME EQUIVALENTS, BY FUNCTION			
			TOTAL	RESEARCH AND DEVELOPMENT		OTHER SCIENTIFIC AND ENGINEERING ACTIVITIES
				TOTAL R&D	MEDICAL AND HEALTH-RELATED R&D	
		(1)	(2)	(3)	(4)	(5)
	1. Ph.D. or Sc.D.	1,121	1,102	1,097	37	5
	2. M.D., D.D.S., D.V.M., D.O., O.D., D.S.C.	36	36	36	32	-
	3. Master	1,878	1,847	1,827	47	20
	4. Bachelor or the equivalent	2,460	2,371	2,326	20	45
	5. Total* *(Sum of 1 to 4)*	5,495	5,356	5,286	136	70

*Note that total reported in Item 8-5, column 1, should be the same as the total reported in Item 7-80, column 1. Similarly, totals reported in Item 8-5, columns 2 through 5, should be the same as totals reported in Item 7-80, columns 2 through 5, respectively.

Item 9	TECHNICIANS - Number of persons employed (paid) by your organization working as technicians, by field and function in which primarily employed, January 1967	PRIMARY FUNCTION – JANUARY 1967		
		TOTAL	R&D	OTHER SCIENTIFIC AND ENGINEERING ACTIVITIES
		(1)	(2)	(3)
	1. Engineering and physical science technicians	960	949	11
	2. Life science technicians	756	756	-
	3. Social science technicians	21	21	-
	4. Other technicians	215	191	24
	5. Total *(Sum of 1 to 4)*	1,952	1,917	35

REMARKS:

IDENTITY OF OFFICIAL COMPLETING THIS FORM

NAME OF PERSON

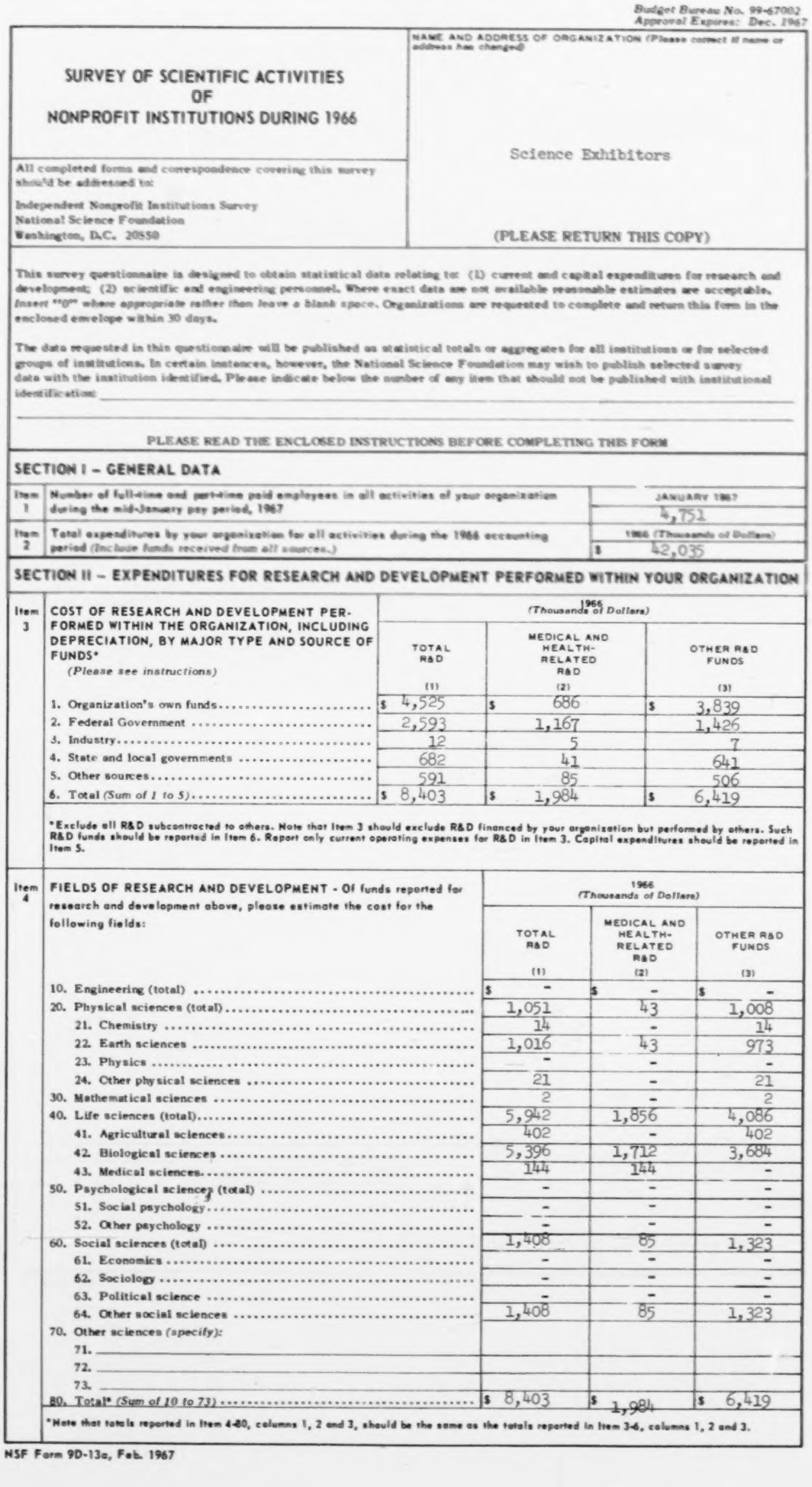
TITLE

TELEPHONE NO. AREA CODE EXTENSION DATE

NAME AND ADDRESS OF ORGANIZATION
(Number, Street, City, State, ZIP Code)

GPO 919-855

APPENDIX C



Budget Bureau No. 99-67002
Approval Expires: Dec. 1967

SURVEY OF SCIENTIFIC ACTIVITIES OF NONPROFIT INSTITUTIONS DURING 1966

All completed forms and correspondence covering this survey should be addressed to:

Independent Nonprofit Institutions Survey
National Science Foundation
Washington, D.C. 20550

NAME AND ADDRESS OF ORGANIZATION *(Please correct if name or address has changed)*

Science Exhibitors

(PLEASE RETURN THIS COPY)

This survey questionnaire is designed to obtain statistical data relating to: (1) current and capital expenditures for research and development; (2) scientific and engineering personnel. Where exact data are not available reasonable estimates are acceptable. *Insert "0" where appropriate rather than leave a blank space.* Organizations are requested to complete and return this form in the enclosed envelope within 30 days.

The data requested in this questionnaire will be published as statistical totals or aggregates for all institutions or for selected groups of institutions. In certain instances, however, the National Science Foundation may wish to publish selected survey data with the institution identified. Please indicate below the number of any item that should not be published with institutional identification: ______

PLEASE READ THE ENCLOSED INSTRUCTIONS BEFORE COMPLETING THIS FORM

SECTION I – GENERAL DATA

Item 1	Number of full-time and part-time paid employees in all activities of your organization during the mid-January pay period, 1967	JANUARY 1967 4,751
Item 2	Total expenditures by your organization for all activities during the 1966 accounting period *(Include funds received from all sources.)*	1966 (Thousands of Dollars) $ 42,035

SECTION II – EXPENDITURES FOR RESEARCH AND DEVELOPMENT PERFORMED WITHIN YOUR ORGANIZATION

Item 3

COST OF RESEARCH AND DEVELOPMENT PERFORMED WITHIN THE ORGANIZATION, INCLUDING DEPRECIATION, BY MAJOR TYPE AND SOURCE OF FUNDS* *(Please see instructions)*	1966 *(Thousands of Dollars)*		
	TOTAL R&D (1)	MEDICAL AND HEALTH-RELATED R&D (2)	OTHER R&D FUNDS (3)
1. Organization's own funds	$ 4,525	$ 686	$ 3,839
2. Federal Government	2,593	1,167	1,426
3. Industry	12	5	7
4. State and local governments	682	41	641
5. Other sources	591	85	506
6. Total *(Sum of 1 to 5)*	$ 8,403	$ 1,984	$ 6,419

*Exclude all R&D subcontracted to others. Note that Item 3 should exclude R&D financed by your organization but performed by others. Such R&D funds should be reported in Item 6. Report only current operating expenses for R&D in Item 3. Capital expenditures should be reported in Item 5.

Item 4

FIELDS OF RESEARCH AND DEVELOPMENT - Of funds reported for research and development above, please estimate the cost for the following fields:	1966 *(Thousands of Dollars)*		
	TOTAL R&D (1)	MEDICAL AND HEALTH-RELATED R&D (2)	OTHER R&D FUNDS (3)
10. Engineering (total)	$ -	$ -	$ -
20. Physical sciences (total)	1,051	43	1,008
21. Chemistry	14	-	14
22. Earth sciences	1,016	43	973
23. Physics	-	-	-
24. Other physical sciences	21	-	21
30. Mathematical sciences	2	-	2
40. Life sciences (total)	5,942	1,856	4,086
41. Agricultural sciences	402	-	402
42. Biological sciences	5,396	1,712	3,684
43. Medical sciences	144	144	-
50. Psychological sciences (total)	-	-	-
51. Social psychology	-	-	-
52. Other psychology	-	-	-
60. Social sciences (total)	1,408	85	1,323
61. Economics	-	-	-
62. Sociology	-	-	-
63. Political science	-	-	-
64. Other social sciences	1,408	85	1,323
70. Other sciences *(specify)*:			
71.			
72.			
73.			
80. Total* *(Sum of 10 to 73)*	$ 8,403	$ 1,984	$ 6,419

*Note that totals reported in Item 4-80, columns 1, 2 and 3, should be the same as the totals reported in Item 3-6, columns 1, 2 and 3.

NSF Form 9D-13a, Feb. 1967

SECTION II – EXPENDITURES FOR RESEARCH AND DEVELOPMENT PERFORMED WITHIN YOUR ORGANIZATION (Continued)

Item 5		1966 *(Thousands of Dollars)*		
		TOTAL R&D (1)	MEDICAL AND HEALTH-RELATED R&D (2)	OTHER R&D FUNDS (3)
	CAPITAL EXPENDITURES FOR RESEARCH AND DEVELOPMENT PERFORMED WITHIN YOUR ORGANIZATION *(Exclude depreciation)*	$ 1,388	$ 271	$ 1,117

SECTION III – EXPENDITURES BY YOUR ORGANIZATION FOR RESEARCH AND DEVELOPMENT PERFORMED BY OTHER ORGANIZATIONS, BY TYPE OF RECIPIENT

Item 6	**RECIPIENTS OF OUTSIDE FINANCING** *(Exclude subcontracts)*	1966 *(Thousands of Dollars)*		
		TOTAL R&D (1)	MEDICAL AND HEALTH-RELATED R&D (2)	OTHER R&D FUNDS (3)
	10. Within the United States (total)	$ 20	$ 5	$ 15
	11. Universities and colleges *(including affiliated hospitals)*	-	-	-
	12. Other nonprofit organizations	-	-	-
	13. Other recipients, including individuals	20	5	15
	20. Outside the United States	-	-	-
	30. Total *(Sum of 10 and 20)*	$ 20	$ 5	$ 15

SECTION IV – SCIENTIFIC AND ENGINEERING PERSONNEL

Item 7	**SCIENTISTS AND ENGINEERS**—The number of scientific and engineering personnel employed (paid) by your organization, by field and function, January 1967. *(Please see instructions.)*	JANUARY 1967				
			FULL-TIME EQUIVALENTS, BY FUNCTION			
				RESEARCH AND DEVELOPMENT		
		NUMBER EMPLOYED FULL-OR PART-TIME (1)	TOTAL (2)	TOTAL R&D (3)	MEDICAL AND HEALTH-RELATED R&D (4)	OTHER SCIENTIFIC AND ENGINEERING ACTIVITIES (5)
	10. Engineers (total)	2	1	-	-	1
	11. Aeronautical engineers	-	-	-	-	-
	12. Chemical engineers	-	-	-	-	-
	13. Civil engineers	-	-	-	-	-
	14. Electrical engineers	1	-	-	-	-
	15. Industrial engineers	-	-	-	-	-
	16. Mechanical engineers	-	-	-	-	-
	17. Other engineers	1	1	-	-	1
	20. Physical scientists (total)	98	82	63	-	19
	21. Chemists	1	1	1	-	-
	22. Earth scientists	85	71	57	-	14
	23. Physicists	2	2	-	-	2
	24. Other physical scientists	10	8	5	-	3
	30. Mathematicians (total)	1	1	-	-	1
	40. Life scientists (total)	387	349	286	93	63
	41. Agricultural scientists	15	15	11	-	4
	42. Biological scientists	366	329	271	90	58
	43. Medical scientists (exclude practitioners)	6	5	4	3	1
	50. Psychologists (total)	1	1	1	-	-
	51. Social psychologist	1	1	1	-	-
	52. Other psychologists	-	-	-	-	-
	60. Social scientists (total)	111	105	76	2	29
	61. Economists	-	-	-	-	-
	62. Sociologists	-	-	-	-	-
	63. Political scientists	-	-	-	-	-
	64. Other social scientists	111	105	76	2	29
	70. Other scientists (specify):					
	71.					
	72.					
	73.					
	80. *Total (Sum of 10 to 73)*	600	539	426	95	113

Item 8	Number of scientists and engineers, by highest earned degree and function, January 1967	NUMBER EMPLOYED FULL- OR PART-TIME (1)	FULL-TIME EQUIVALENTS, BY FUNCTION			
			TOTAL (2)	RESEARCH AND DEVELOPMENT		OTHER SCIENTIFIC AND ENGINEERING ACTIVITIES (5)
				TOTAL R&D (3)	MEDICAL AND HEALTH-RELATED R&D (4)	
	1. Ph.D. or Sc.D.	274	256	202	52	54
	2. M.D., D.D.S., D.V.M., D.O., O.D., D.S.C.	9	8	6	4	2
	3. Master	137	117	97	17	20
	4. Bachelor or the equivalent	180	158	121	22	37
	5. Total* *(Sum of 1 to 4)*	600	539	426	95	113

*Note that total reported in Item 8-5, column 1, should be the same as the total reported in Item 7-80, column 1. Similarly, totals reported in Item 8-5, columns 2 through 5, should be the same as totals reported in Item 7-80, columns 2 through 5, respectively.

Item 9	TECHNICIANS - Number of persons employed (paid) by your organization working as technicians, by field and function in which primarily employed, January 1967	PRIMARY FUNCTION – JANUARY 1967		
		TOTAL (1)	R&D (2)	OTHER SCIENTIFIC AND ENGINEERING ACTIVITIES (3)
	1. Engineering and physical science technicians	24	21	3
	2. Life science technicians	201	125	76
	3. Social science technicians	15	10	5
	4. Other technicians	27	10	17
	5. Total *(Sum of 1 to 4)*	267	166	101

REMARKS:

IDENTITY OF OFFICIAL COMPLETING THIS FORM

NAME OF PERSON	NAME AND ADDRESS OF ORGANIZATION *(Number, Street, City, State, ZIP Code)*
TITLE	
TELEPHONE NO. AREA CODE EXTENSION DATE	

GPO 919-855

Budget Bureau No. 99-67002
Approval Expires: Dec. 1967

SURVEY OF SCIENTIFIC ACTIVITIES OF NONPROFIT INSTITUTIONS DURING 1966

NAME AND ADDRESS OF ORGANIZATION (Please correct if name or address has changed)

Other Nonprofit Institutions

(PLEASE RETURN THIS COPY)

All completed forms and correspondence covering this survey should be addressed to:

Independent Nonprofit Institutions Survey
National Science Foundation
Washington, D.C. 20550

This survey questionnaire is designed to obtain statistical data relating to: (1) current and capital expenditures for research and development; (2) scientific and engineering personnel. Where exact data are not available reasonable estimates are acceptable. *Insert "0" where appropriate rather than leave a blank space.* Organizations are requested to complete and return this form in the enclosed envelope within 30 days.

The data requested in this questionnaire will be published as statistical totals or aggregates for all institutions or for selected groups of institutions. In certain instances, however, the National Science Foundation may wish to publish selected survey data with the institution identified. Please indicate below the number of any item that should not be published with institutional identification: ____________________

PLEASE READ THE ENCLOSED INSTRUCTIONS BEFORE COMPLETING THIS FORM

SECTION I – GENERAL DATA

Item 1	Number of full-time and part-time paid employees in all activities of your organization during the mid-January pay period, 1967	JANUARY 1967 8,775
Item 2	Total expenditures by your organization for all activities during the 1966 accounting period *(Include funds received from all sources.)*	1966 (Thousands of Dollars) $ 93,851

SECTION II – EXPENDITURES FOR RESEARCH AND DEVELOPMENT PERFORMED WITHIN YOUR ORGANIZATION

Item 3 COST OF RESEARCH AND DEVELOPMENT PERFORMED WITHIN THE ORGANIZATION, INCLUDING DEPRECIATION, BY MAJOR TYPE AND SOURCE OF FUNDS* *(Please see instructions)*

	1966 (Thousands of Dollars)		
	TOTAL R&D (1)	MEDICAL AND HEALTH-RELATED R&D (2)	OTHER R&D FUNDS (3)
1. Organization's own funds	$ 3,829	$ 2,421	$ 1,408
2. Federal Government	3,578	3,386	192
3. Industry	51	13	38
4. State and local governments	305	118	187
5. Other sources	1,521	508	1,013
6. Total *(Sum of 1 to 5)*	$ 9,284	$ 6,446	$ 2,838

*Exclude all R&D subcontracted to others. Note that Item 3 should exclude R&D financed by your organization but performed by others. Such R&D funds should be reported in Item 6. Report only current operating expenses for R&D in Item 3. Capital expenditures should be reported in Item 5.

Item 4 FIELDS OF RESEARCH AND DEVELOPMENT - Of funds reported for research and development above, please estimate the cost for the following fields:

	1966 (Thousands of Dollars)		
	TOTAL R&D (1)	MEDICAL AND HEALTH-RELATED R&D (2)	OTHER R&D FUNDS (3)
10. Engineering (total)	$ 225	$ 225	$ -
20. Physical sciences (total)	16	-	16
21. Chemistry	-	-	-
22. Earth sciences	-	-	-
23. Physics	-	-	-
24. Other physical sciences	16	-	16
30. Mathematical sciences	318	61	257
40. Life sciences (total)	4,444	4,078	366
41. Agricultural sciences	22	-	22
42. Biological sciences	1,666	1,628	38
43. Medical sciences	2,756	2,450	306
50. Psychological sciences (total)	3,554	2,019	1,535
51. Social psychology	329	286	43
52. Other psychology	3,225	1,733	1,492
60. Social sciences (total)	727	63	664
61. Economics	201	30	171
62. Sociology	239	13	226
63. Political science	150	-	150
64. Other social sciences	137	20	117
70. Other sciences *(specify)*:			
71. ____			
72. ____			
73. ____			
80. Total* *(Sum of 10 to 73)*	$ 9,284	$ 6,446	$ 2,838

*Note that totals reported in Item 4-80, columns 1, 2 and 3, should be the same as the totals reported in Item 3-6, columns 1, 2 and 3.

NSF Form 9D-13a, Feb. 1967

SECTION II – EXPENDITURES FOR RESEARCH AND DEVELOPMENT PERFORMED WITHIN YOUR ORGANIZATION (Continued)

Item 5		1966 (Thousands of Dollars)		
		TOTAL R&D (1)	MEDICAL AND HEALTH-RELATED R&D (2)	OTHER R&D FUNDS (3)
	CAPITAL EXPENDITURES FOR RESEARCH AND DEVELOPMENT PERFORMED WITHIN YOUR ORGANIZATION *(Exclude depreciation)*	$ 1,315	$ 246	$ 1,069

SECTION III – EXPENDITURES BY YOUR ORGANIZATION FOR RESEARCH AND DEVELOPMENT PERFORMED BY OTHER ORGANIZATIONS, BY TYPE OF RECIPIENT

Item 6	RECIPIENTS OF OUTSIDE FINANCING *(Exclude subcontracts)*	1966 (Thousands of Dollars)		
		TOTAL R&D (1)	MEDICAL AND HEALTH-RELATED R&D (2)	OTHER R&D FUNDS (3)
	10. Within the United States (total)	$ 2,908	$ 1,472	$ 1,436
	11. Universities and colleges *(including affiliated hospitals)*	1,603	1,099	504
	12. Other nonprofit organizations	414	277	137
	13. Other recipients, including individuals	891	96	795
	20. Outside the United States	991	619	372
	30. Total *(Sum of 10 and 20)*	$ 3,899	$ 2,091	$ 1,808

SECTION IV – SCIENTIFIC AND ENGINEERING PERSONNEL

Item 7	SCIENTISTS AND ENGINEERS--The number of scientific and engineering personnel employed (paid) by your organization, by field and function, January 1967. *(Please see instructions.)*	JANUARY 1967				
			FULL-TIME EQUIVALENTS, BY FUNCTION			
				RESEARCH AND DEVELOPMENT		
		NUMBER EMPLOYED FULL- OR PART-TIME (1)	TOTAL (2)	TOTAL R&D (3)	MEDICAL AND HEALTH-RELATED R&D (4)	OTHER SCIENTIFIC AND ENGINEERING ACTIVITIES (5)
	10. Engineers (total)	24	21	15	12	6
	11. Aeronautical engineers	–	–	–	–	–
	12. Chemical engineers	–	–	–	–	–
	13. Civil engineers	–	–	–	–	–
	14. Electrical engineers	15	12	10	7	2
	15. Industrial engineers	–	–	–	–	–
	16. Mechanical engineers	6	6	4	4	2
	17. Other engineers	3	3	1	1	2
	20. Physical scientists (total)	6	6	6	–	–
	21. Chemists	2	2	2	–	–
	22. Earth scientists	–	–	–	–	–
	23. Physicists	2	2	2	–	–
	24. Other physical scientists	2	2	2	–	–
	30. Mathematicians (total)	8	8	8	2	–
	40. Life scientists (total)	352	274	193	168	81
	41. Agricultural scientists	3	3	3	–	–
	42. Biological scientists	137	115	104	89	11
	43. Medical scientists (exclude practitioners)	212	156	86	79	70
	50. Psychologists (total)	308	230	227	71	3
	51. Social psychologist	77	27	26	21	1
	52. Other psychologists	231	203	201	50	2
	60. Social scientists (total)	94	81	55	25	26
	61. Economists	9	9	6	–	3
	62. Sociologists	15	15	13	2	2
	63. Political scientists	4	4	4	–	–
	64. Other social scientists	66	53	32	23	21
	70. Other scientists (specify):					
	71.__________					
	72.__________					
	73.__________					
	30. *Total (Sum of 10 to 73)*	792	620	504	278	116

Item						
Item 8	Number of scientists and engineers, by highest earned degree and function, January 1967	NUMBER EMPLOYED FULL- OR PART-TIME (1)	FULL-TIME EQUIVALENTS, BY FUNCTION			
			TOTAL (2)	RESEARCH AND DEVELOPMENT		OTHER SCIENTIFIC AND ENGINEERING ACTIVITIES (5)
				TOTAL R&D (3)	MEDICAL AND HEALTH-RELATED R&D (4)	
	1. Ph.D. or Sc.D.	352	254	243	125	11
	2. M.D., D.D.S., D.V.M., D.O., O.D., D.S.C.	185	140	68	57	72
	3. Master	152	138	119	46	19
	4. Bachelor or the equivalent	103	88	74	50	14
	5. Total* (*Sum of 1 to 4*)	792	620	504	278	116

***Note that total reported in Item 8-5, column 1, should be the same as the total reported in Item 7-80, column 1. Similarly, totals reported in Item 8-5, columns 2 through 5, should be the same as totals reported in Item 7-80, columns 2 through 5, respectively.**

Item				
Item 9	**TECHNICIANS** - Number of persons employed (paid) by your organization working as technicians, by field and function in which primarily employed, January 1967	PRIMARY FUNCTION – JANUARY 1967		
		TOTAL (1)	R&D (2)	OTHER SCIENTIFIC AND ENGINEERING ACTIVITIES (3)
	1. Engineering and physical science technicians	23	10	13
	2. Life science technicians	147	131	16
	3. Social science technicians	18	18	-
	4. Other technicians	52	49	3
	5. Total (*Sum of 1 to 4*)	240	208	32

REMARKS:

IDENTITY OF OFFICIAL COMPLETING THIS FORM

NAME OF PERSON

TITLE

TELEPHONE NO. AREA CODE EXTENSION DATE

NAME AND ADDRESS OF ORGANIZATION
(*Number, Street, City, State, ZIP Code*)

GPO 919-855

Budget Bureau No. 99-67002
Approval Expires: Dec. 1967

SURVEY OF SCIENTIFIC ACTIVITIES OF NONPROFIT INSTITUTIONS DURING 1966

PROFESSIONAL OR TECHNICAL SOCIETIES AND ACADEMIES OF SCIENCE

All completed forms and correspondence covering this survey should be addressed to:

Independent Nonprofit Institutions Survey
National Science Foundation
Washington, D.C. 20550

NAME AND ADDRESS OF ORGANIZATION *(Please correct if name or address has changed)*

Composite questionnaire for
Professional or Technical Societies
and Academies of Science

(PLEASE RETURN THIS COPY)

This survey questionnaire is designed to obtain statistical data relating to: (1) expenditures for research and development; (2) expenditures for scientific and technical information activities; and (3) scientific and engineering personnel. Where exact data are not available reasonable estimates are acceptable. *Insert "0" where appropriate rather than leave a blank space.* Organizations are requested to complete and return this form in the enclosed self-addressed envelope within 30 days.

The data requested in this questionnaire will be published as statistical totals or aggregates for all institutions or for selected groups of institutions. In certain instances, however, the National Science Foundation may wish to publish selected survey data with the institution identified. Please indicate below the number of any item that should not be published with institutional identification: __________

PLEASE READ THE ENCLOSED INSTRUCTIONS BEFORE COMPLETING THIS FORM

SECTION I - GENERAL DATA

Item 1.	Number of full-time and part-time paid employees in all activities of your organization during the mid-January pay period, 1967	JANUARY 1967 13,902
Item 2	Total expenditures by your organization for all activities during the 1966 accounting period *(Include funds received from all sources.)*	1966 *(Thousands of Dollars)* $ 269,450
Item 3	Total number of members of your organization at end of year *(Exclude all honorary and student members.)*	1966 MEMBERSHIP 2,937,484

SECTION II - EXPENDITURES FOR RESEARCH AND DEVELOPMENT PERFORMED WITHIN YOUR ORGANIZATION

Item 4

COST OF RESEARCH AND DEVELOPMENT PERFORMED WITHIN YOUR ORGANIZATION, BY SOURCE OF FUNDS **(Please see instructions)*:	1966 *(Thousands of Dollars)*
1. Organization's own funds	$ 7,452
2. Federal Government	5,476
3. Industry	1,138
4. State and local governments	422
5. Other sources	1,189
6. Total *(Sum of 1 to 5)*	$ 15,677

* Exclude all R&D subcontracted to others.

Item 5

FIELDS OF RESEARCH AND DEVELOPMENT - Of total funds reported in Item 4 for R&D performed within your organization, please estimate the cost for the following fields:	1966 *(Thousands of Dollars)*
10. Engineering	$ 2,221
20. Physical sciences	2,993
30. Mathematical sciences	279
40. Life sciences	6,895
50. Psychological sciences	538
60. Social sciences	2,751
70. Other sciences *(specify)*:	
71.	
72.	
73.	
80. Total **(Sum of 10 through 73)*	$ 15,677

* Note that total reported in Item 5-80 should be the same as the total reported in Item 4-6.

SECTION III - EXPENDITURES OF YOUR ORGANIZATION FOR RESEARCH AND DEVELOPMENT PERFORMED BY OTHER ORGANIZATIONS, BY TYPE OF RECIPIENT

Item 6

RECIPIENTS OF OUTSIDE FINANCING *(Exclude subcontracts)*	1966 *(Thousands of Dollars)*
10. Within the United States (total)	$ 5,757
11. Universities and colleges (including affiliated hospitals)	3,834
12. Professional or technical societies	217
13. Other nonprofit institutions	726
14. Other recipients, including individuals	980
20. Outside the United States	315
30. Total *(Sum of 10 and 20)*	$ 6,072

NSF Form 9D-13b, Feb 1967

SECTION IV - SCIENTIFIC AND TECHNICAL INFORMATION ACTIVITIES

Item 7	EXPENDITURES FOR SCIENTIFIC AND TECHNICAL INFORMATION, BY TYPE OF ACTIVITY	1966 *(Thousands of Dollars)*
	1. Publication and distribution	$ 78,315
	2. Libraries, science information centers, and other reference services	7,046
	3. Scientific symposia and technical meetings	21,757
	4. Research and development projects on scientific communication and documentation	2,946
	5. Total *(Sum of 1 to 4)*	$ 110,064

Item 8	FEDERAL CONTRACTS AND GRANTS - What amount of your costs of scientific and technical information activities reported above was financed by Federal Agencies?	*(Thousands of Dollars)*
		$ 17,308

SECTION V - SCIENTIFIC AND ENGINEERING PERSONNEL

Item 9	**SCIENTISTS AND ENGINEERS** - Number of scientific and engineering personnel by highest earned degree and function in which primarily employed, January 1967. *(Include all scientific and engineering personnel employed full time and part time.)*	PRIMARY FUNCTION- JANUARY 1967		
		TOTAL (1)	RESEARCH AND DEVELOPMENT, INCLUDING ADMINISTRATION OF R&D (2)	ALL OTHER SCIENTIFIC AND ENGINEERING ACTIVITIES (3)
	1. Ph.D. or Sc.D.	547	223	324
	2. M.D., D.D.S., D.V.M., D.O., O.D., D.S.C.	187	134	53
	3. Master	531	185	346
	4. Bachelor or the equivalent	790	219	571
	5. Total *(Sum of 1 to 4)*	2,055	761	1,294

REMARKS:

IDENTITY OF INDIVIDUAL COMPLETING THIS FORM:

NAME OF PERSON				NAME AND ADDRESS OF ORGANIZATION *(Number, Street, City, State, ZIP Code)*
TITLE				
TELEPHONE NO.	AREA CODE	EXTENSION	DATE	

GPO 919-856

Budget Bureau No. 99-67002
Approval Expires: Dec. 1967

SURVEY OF SCIENTIFIC ACTIVITIES OF NONPROFIT INSTITUTIONS DURING 1966

PRIVATE PHILANTHROPIC FOUNDATIONS

NAME AND ADDRESS OF ORGANIZATION *(Please correct if name or address has changed)*

Composite questionnaire for
Private Philanthropic Foundations

All completed forms and correspondence covering this survey should be addressed to:

Independent Nonprofit Institutions Survey
National Science Foundation
Washington, D.C. 20550

(PLEASE RETURN THIS COPY)

This survey questionnaire is designed to obtain statistical data relating to: (1) current and capital expenditures for research and education in the sciences, (2) scientific and engineering personnel. The dollar amounts reported on this form should reflect actual expenditures made by your foundation during the 1966 accounting period. Report grants paid out, as distinct from grants appropriated. Where exact data are not available, reasonable estimates are acceptable. *Insert "0" where appropriate rather than leave a blank space.* Organizations are requested to complete and return this form in the enclosed self-addressed envelope within 30 days.

The data requested in this questionnaire will be published as statistical totals or aggregates for all institutions or for selected groups of institutions. In certain instances, however, the National Science Foundation may wish to publish selected survey data with the institution identified. Please indicate below the number of any item that should not be published with institutional identification:

PLEASE READ THE ENCLOSED INSTRUCTIONS BEFORE COMPLETING THIS FORM

SECTION I – GENERAL DATA

Item 1	**Number of full-time and part-time paid employees in all activities of your organization during the mid-January pay period, 1967**	JANUARY 1967 2,479
Item 2	**Total and program expenditures during the 1966 accounting period:**	1966 *(Thousands of Dollars)*
	1. Program expenditures	$ 666,560
	2. All other expenditures (Including those made for the administration of the foundation itself)	25,518
	3. Total expenditures *(Sum of 1 and 2)*	$ 692,080
Item 3	**Foundation's total assets as of the end of the 1966 accounting period:**	1966 *(Thousands of Dollars)*
	1. Market value	$ 10,231,628
	2. Ledger value	$ 7,278,525

Item 4	**Foundation's program expenditures (Item 2-1) for support of activities in the following areas:**	1966 *(Thousands of Dollars)* TOTAL (1)	INTRAMURAL PROGRAMS (2)	EXTRAMURAL PROGRAMS (3)
	10. Natural sciences (including engineering) and social sciences, total:	$ 204,438	$ 4,577	$ 199,861
	11. Research in the sciences	91,787	2,813	88,974
	12. Education in the sciences	108,342	1,351	106,991
	13. Other scientific activities	4,309	413	3,896
	20. Health	28,543	854	27,689
	30. Welfare	45,692	118	45,574
	40. Humanities	95,748	938	94,810
	50. International activities	51,113	5,280	45,833
	60. Education (Exclude expenditures for education in the sciences which should be entered in Item 4-12 above)	198,368	615	197,753
	70. Other areas of support	26,225	1,058	25,167
	80. Administrative and operating expenditures associated with the above programs (10 through 70)	16,433	16,433	▨
	90. Total* *(Sum of 10 to 80)*	$ 666,560	$ 29,873	$ 636,687

*Total reported in Item 4-90, column (1) should be the same as that reported in Item 2-1.

NSF Form 9D-13c Feb 1967

SECTION II - EXPENDITURES FOR RESEARCH

Item 5	Please report your foundation's *program* expenditures for research *(Item 4-11)* among the following categories:	1966 *(Thousands of Dollars)* TOTAL RESEARCH (1)	MEDICAL AND HEALTH-RELATED RESEARCH (2)	OTHER RESEARCH ACTIVITIES (3)
	1. Projects	$ 74,378	$ 35,460	$ 38,918
	2. Buildings and equipment	15,883	3,447	12,436
	3. Endowments	1,526	343	1,183
	4. Total * *(Sum of 1, 2, and 3)*	$ 91,787	$ 39,250	$ 52,537

* Total reported in 5-4, column (1) should be the same as Item 4-11, column (1).

Item 6	Please report your foundation's *project* expenditures for research *(Item 5-1)* among the following fields of science (Exclude expenditures for endowments and buildings and equipment):	1966 *(Thousands of Dollars)* TOTAL RESEARCH (1)	MEDICAL AND HEALTH-RELATED RESEARCH (2)	OTHER RESEARCH ACTIVITIES (3)
	10. Engineering	$ 844	$ 14	$ 830
	20. Physical sciences	9,726	42	9,684
	30. Mathematical sciences	450	6	444
	40. Life sciences	40,404	32,589	7,815
	50. Psychological sciences	2,344	2,259	85
	60. Social sciences	20,610	550	20,060
	70. Other sciences *(Specify)*:			
	71.			
	72.			
	73.			
	80. Total * *(Sum of 10 to 73)*	$ 74,378	$ 35,460	$ 38,918

* Totals reported in Item 6-80, column (1), column (2), and column (3), should be the same as totals reported in Item 5-1, column (1), column (2), and column (3), respectively.

Item 7	Please report your foundation's *program* expenditures for research *(Item 4-11)*, by performing organization:	1966 *(Thousands of Dollars)* TOTAL RESEARCH (1)	MEDICAL AND HEALTH-RELATED RESEARCH (2)	OTHER RESEARCH ACTIVITIES (3)
	10. Intramural	$ 2,813	$ 570	$ 2,243
	20. Extramural within U.S., Total	72,926	34,426	38,500
	21. Universities and colleges (Including affiliated hospitals)	45,203	18,730	26,473
	22. Other nonprofit hospitals	5,806	5,803	3
	23. Private foundations and trusts	1,162	874	288
	24. Independent nonprofit research institutes	12,094	6,266	5,828
	25. Other nonprofit organizations	6,131	1,713	4,418
	26. Individuals	2,013	822	1,191
	27. Other	517	218	299
	30. Extramural outside U.S.	16,048	4,254	11,794
	40. Total * *(Sum of 10, 20, and 30)*	$ 91,787	$ 39,250	$ 52,537

* Total reported in Item 7-40, column (1) should be the same as Item 5-4, column (1). Item 7-40, column (2), should be the same as Item 5-4, column (2); and Item 7-40, column (3), should be the same as Item 5-4, column (3).

SECTION III - EXPENDITURES FOR EDUCATION IN THE SCIENCES

Item 8	Please report your foundation's *program* expenditures for education in the sciences *(Item 4-12)* among the following categories:	1966 *(Thousands of Dollars)* TOTAL EDUCATION IN THE SCIENCES (1)	MEDICAL AND HEALTH-RELATED EDUCATION (2)	OTHER SCIENCE EDUCATION ACTIVITIES (3)
	1. Endowments	$ 4,518	$ 1,956	$ 2,562
	2. Buildings and equipment	26,292	12,473	13,819
	3. Projects	46,219	12,032	34,187
	4. Fellowships, scholarships, etc.	31,313	7,293	24,020
	5. Total * *(Sum of 1 to 4)*	$ 108,342	$ 33,754	$ 74,588

* Total reported in Item 8-5, column (1) should be the same as Item 4-12, column (1).

APPENDIX C

SECTION IV – SCIENTIFIC AND ENGINEERING PERSONNEL

Item 9

SCIENTISTS AND ENGINEERS

Number of scientific and engineering personnel, by highest earned degree and function in which primarily employed, January 1967. (Include all scientific and engineering personnel employed full time and part time.)

	JANUARY 1967 PRIMARY FUNCTION		
	TOTAL (1)	RESEARCH INCLUDING ADMINISTRATION OF RESEARCH (2)	OTHER SCIENTIFIC AND ENGINEERING ACTIVITIES (3)
1. Ph.D. or Sc.D.	175	164	11
2. M.D., D.D.S., D.V.M., D.O., O.D., D.S.C.	49	48	1
3. Master	96	76	20
4. Bachelor or the equivalent	150	74	76
5. Total *(Sum of 1 to 4)*	470	362	108

REMARKS:

IDENTITY OF OFFICIAL COMPLETING THIS FORM

NAME OF PERSON				NAME AND ADDRESS OF ORGANIZATION *(Number, Street, City, State, ZIP Code)*
TITLE				
TELEPHONE NO.	AREA CODE	EXTENSION	DATE	

GPO 919-857

NSF Form 9D-13a
Instruction Sheet

NATIONAL SCIENCE FOUNDATION

INSTRUCTIONS FOR SURVEY OF SCIENTIFIC ACTIVITIES OF NONPROFIT INSTITUTIONS DURING 1966

OUTLINE OF INSTRUCTIONS

Page
GENERAL INSTRUCTIONS 1
SECTION I – GENERAL DATA 2
    Item 1, Employment 2
    Item 2, Total Expenditures 2
DEFINITION OF RESEARCH AND DEVELOPMENT 2
    Basic Research 2
    Applied Research 2
    Development 2
    Medical and Health-Related Research and Development 2
    Exclusions from Research and Development 3
SECTION II–EXPENDITURES FOR RESEARCH AND DEVELOPMENT 3
    Item 3, Source of Funds 3
    Item 3-1, Organization's Own Funds 3
    Item 3-2, Federal Government Funds 3
    Item 3-3, Industry 4
    Item 3-4, State and Local Governments 4
    Item 3-5, Other Sources 4
    Item 4, Fields of Research and Development 4
    Item 5, Capital Expenditures for Research and Development Performed within Your Organization 6
SECTION III–EXPENDITURES BY YOUR ORGANIZATION FOR RESEARCH AND DEVELOPMENT PERFORMED BY OTHER ORGANIZATIONS 6
    Item 6, Recipients of Outside Financing 6
    Item 6-10, Within the United States 6
    Item 6-20, Outside the United States 6
SECTION IV–SCIENTIFIC AND ENGINEERING PERSONNEL 7
    Item 7, Scientists and Engineers 7
    Item 8, Scientists and Engineers, by Highest Earned Degree 7
    Item 9, Technicians 8

GENERAL INSTRUCTIONS

The National Science Foundation, an independent agency of the Federal Government, requests your cooperation in completing the attached questionnaire covering the financial and manpower data of your organization as they relate to science and engineering. The purpose of this survey is to obtain statistical data on the resources devoted to scientific and engineering activities by nonprofit organizations. The information obtained will assist the National Science Foundation in fulfilling its responsibility for the support of research and education in the sciences and engineering and in the formulation of recommendations on national science policy in keeping with the National Science Foundation Act of 1950 and Executive Order No. 10521 of March 17, 1954.

Where no specific records exist for statistical data requested in the form, reasonable estimates are acceptable. Please report for the entire organization including any unincorporated branches, divisions and departments. If separate offices and facilities are maintained in the United States in addition to those at the address to which the survey materials were mailed, please indicate the name and address of each of these facilities in the Remarks section or on an attached sheet.

The dollar amounts reported on this form should reflect actual expenditures for the year. All financial data requested should be reported in thousands of dollars; for example, an expenditure of $25,000 should be reported in the appropriate column as $25. Insert "0" where appropriate rather than leave a blank space.

SECTION I–GENERAL DATA

Item 1 – Employment — In item 1, report the number of persons employed *directly* by your organization on a full-time and part-time basis in all activities in the United States and in foreign countries during the mid-January pay period (the payroll period containing January 12, 1967). Do not include contributed services.

Item 2 – Total Expenditures — Report all total direct costs and indirect costs incurred by your organization. These include all incurred expenses attributable to gross income, including expenditures for current operations and administration of the organization; capital expenditures, such as buildings and equipment; and all gifts, grants, contracts, scholarships, etc., made to outside organizations and individuals in the United States and foreign countries, and the administrative and operating expenses associated with such disbursements.

DEFINITION OF RESEARCH AND DEVELOPMENT

The fields covered by research and development in this survey are engineering, physical sciences, mathematical sciences, life sciences, psychological sciences and the social sciences. (For detail on fields and disciplines, see item 4 of the instructions.) For the purposes of this questionnaire, research and development include:

(1) *Basic Research* — Basic research is directed toward increase of knowledge; it is research where the primary aim of the investigator is a fuller knowledge or understanding of the subject under study rather than a practical application thereof.

(2) *Applied Research* — Applied research is concerned with discovering new scientific knowledge primarily for its immediate or specific applications.

(3) *Development* — Development is technical activity on nonroutine problems encountered in translating research findings or other scientific knowledge into products or processes. Exclude production engineering and routine technical services such as quality control and testing.

(4) *Medical and Health-Related Research and Development* — comprise a broad area of scientific inquiry aimed ultimately at the improvement of human health and conquest of disease. It draws upon all fields of science--life, physical, engineering, psychological, and social--and many disciplines within each field. Within this broader context, medical and health-related research and development is defined by the National Institutes of Health as all systematic study directed toward the development and use of scientific knowledge through fundamental research in the laboratory; clinical investigations; clinical trials; epidemiological, engineering, and demographic studies; and controlled pilot projects in the following areas:

a. The causes, diagnosis, treatment, control, prevention of, and rehabilitation relating to the physical and mental diseases and other killing and crippling impairments of mankind;

b. The origin, nature, and solution of health problems not identifiable in terms of disease entities;

c. Broad fields of science important to or underlying diseases and health problems;

d. Research in nutritional and population problems impairing, contributing to, or otherwise affecting optimum health;

e. Application of improved methods, techniques, and equipment for research, diagnosis, therapy, rehabilitation and promotion of public health.

Where existing records do not readily provide the information requested for medical and health-related research and development please furnish your best estimates as to general orders of magnitude. At least on a minimum basis, these estimates may be derived from the sources of funds supporting the research; it may be presumed that research is medical and health-related when funds are provided from the following sources:

(1) pharmaceutical companies, (2) medical supply companies, (3) voluntary health agencies, (4) state and local government health departments, (5) certain Federal agencies, viz. (a) U.S. Public Health Service (including NIH), (b) Children's Bureau, (c) Food and Drug Administration, (d) Vocational Rehabilitation Administration, (e) Department of Defense (Office of the Surgeon General of the Army, of the Air Force, and Bureau of Medicine and Surgery of the Navy), (f) Atomic Energy Commission (Division of Biology and Medicine), (g) National Aeronautics and Space Administration (Aerospace Medicine Division), and (h) Veterans Administration.

Exclusions from Research and Development — Exclude the gathering of general purpose data, activities concerned primarily with the dissemination of scientific information, grants for scholarships and fellowships that are primarily for the training of scientific personnel even though they may entail some research, grants for education, and all fellowships except postdoctoral fellowships.

SECTION II–EXPENDITURES FOR RESEARCH AND DEVELOPMENT PERFORMED WITHIN YOUR ORGANIZATION

Item 3 – Expenditures for Research and Development Performed Within Your Organization, by Source of Funds and Major Type—Include all direct and indirect operating costs incurred to support research and development during the organization's 1966 accounting year. The major relevant costs usually include wages and salaries of all supporting personnel such as technicians, secretaries, and other personnel, costs of administering both intramural research performance and extramural research financed by your organization, costs of materials and supplies consumed, service and supporting costs, depreciation, and shares of other overhead expenses. Include the cost of research and development performed by scientists and engineers directly employed by your organization, whether done in the United States or abroad. If your organization performed research and development for others on contract, include the total charged for the work performed in the year covered by the survey. *Exclude R&D contracts subcontracted by your organization to be performed by other organizations.*

Source of funds refer to the immediate source rather than the ultimate source of funds concerned. For example, funds which are received from a private foundation and expended for research and development by your organization should be reported under item 3-5, "other sources," even if industry was the original source of some or all of the private foundation's funds.

Item 3-1 – Organization's Own Funds — For purposes of this survey, the organization's own funds include earnings from investments, disbursements from capital, membership dues and assessments, liquidation of assets, unrestricted contributions and gifts from private individuals, and earnings from miscellaneous sources such as publication sales, admissions, advertising, etc. Do not include current operating expenses of research and development performed by your organization which were supported by the Federal Government and all other outside sources.

Item 3-2 – Federal Government Funds — Report all funds received for the performance of research and development obtained from Federal Government grants, contracts, or subcontracts. Do not include research and development grants and contracts received from Federal sources that you subcontracted to other organizations.

Item 3-3 – Industry —Include all grants and contracts for research and development which the reporting organization received from industrial firms.

Item 3-4 – State and Local Government— Report all research and development performed by the reporting organization which was financed by agencies and departments of state and local governments.

Item 3-5 – Other Sources — Report all funds received for research and development which were obtained from all other sources other than those listed above, including other nonprofit organizations and individuals.

Item 4 – Fields of Research and Development— Report current operating expenditures for research and development activities performed within your organization. By field of science indicate in column (1) total expenditures for research and development; in column (2) indicate that portion of total R&D expenditures which were expended for medical and health-related research and development; and in column (3) indicate that portion of total R&D expenditures expended for scientific and engineering activities other than medical and health-related.

Listed below are fields of science and engineering with selected disciplines within fields for which separate data are requested. Data on scientific and engineering personnel requested in Section IV should parallel these classifications.

10. Engineering:

- Aeronautical
- Chemical
- Civil
  - Architectural
  - Structural
  - Sanitary
- Electrical
- Industrial
- Mechanical
- Other engineering fields
  - Agricultural
  - Ceramic
  - Geological
  - Mining
  - Nuclear
  - Petroleum
  - Textile
  - Other engineering

20. Physical Sciences:

21. CHEMISTRY

- Agricultural and food chemistry
- Analytical chemistry
- Inorganic chemistry
- Organic chemistry
- Physical chemistry
- Physical organic chemistry
- Radiochemistry and isotope chemistry
- Theoretical chemistry
- Other chemistry

22. EARTH SCIENCES

- Climatology
- Geochemistry
- Geodesy and cartography
- Geography (physical)
- Geology
- Geophysics
- Hydrology and hydrography
- Meteorology
- Mineralogy
- Oceanography
- Paleontology
- Petrography and petrology
- Seismology and volcanology
- Stratigraphy, geomorphology and tectonophysics
- Terrestrial magnetism and electricity
- Other earth sciences

23. PHYSICS

- Acoustics
- Atomic and molecular physics
- Electromagnetic phenomena
- Electron physics and gaseous discharge
- Mechanics
- Nuclear physics and cosmic rays
- Optics
- Solid state physics
- Thermodynamics
- Other physics

24. OTHER PHYSICAL SCIENCES

Astronomy
Metallurgy

30. *Mathematical Sciences:*

Algebra and number theory
Analysis
Differential equations
Functional analysis
Mathematical logic and theory of sets
Mathematical statistics
Numerical analysis
Theoretical mechanics
Topology and geometry
Other mathematics

40. *Life Sciences:*

41. AGRICULTURAL SCIENCES

Agronomy
Animal husbandry
Crops
Dairy husbandry
Fish and wildlife
Food technology
Forestry
Horticulture
Range management
Soils
Other agricultural sciences

42. BIOLOGICAL SCIENCES

Anatomy
Anthropology (physical)
Bacteriology
Biochemistry
Biology
Biometrics
Biophysics
Biostatistics
Botany
Entomology
Genetics
Microbiology
Nutrition
Pathology
Pharmacology
Phytopathology
Physiology
Zoology
Other biological sciences

43. MEDICAL SCIENCES

Anesthesiology
Cardiology
Dermatology
Dentistry
Geriatrics
Internal medicine
Neurology
Obstetrics and gynecology
Ophthalmology
Otolaryngology
Pediatrics
Pharmacy
Physical medicine and rehabilitation
Podiatry
Psychiatry
Public health
Radiology
Surgery
Veterinary medicine
Other clinical sciences

50. *Psychological Sciences:*

51. SOCIAL PSYCHOLOGY

52. OTHER PSYCHOLOGY

60. Social Sciences —The social sciences are concerned primarily with understanding the behavior of groups and individuals as members of groups. Included in the social sciences for purposes of this survey are:

61. ECONOMICS (including agricultural economics, econometrics, and economic statistics)

62. SOCIOLOGY

63. POLITICAL SCIENCE

64. OTHER SOCIAL SCIENCES

    Anthropology (social)
    Archeology
    Geography (economic and social)
    History
    Other social sciences

70. Other Sciences:

Other fields which cannot be classified under one of the above fields.

Item 5 – Capital Expenditures for Research and Development Performed within Your Organization — Report all capital expenditures during the year covered by the survey for building, fixtures, and depreciable equipment used in research and development performed within your organization. Include only costs which are normally chargeable to fixed asset accounts for which depreciation accounts are ordinarily maintained; *include* major alterations, capitalized repairs and improvements; *include* expenditures made during the year for establishments under construction but not yet in operation. Do not include capital expenditures made by owners of property rented or leased by you, including the Federal Government. *Exclude* cost of land and cost of maintenance and repair charged as current operating expense. Also *exclude* costs of government-owned structures or equipment.

SECTION III–EXPENDITURES BY YOUR ORGANIZATION FOR RESEARCH AND DEVELOPMENT PERFORMED BY OTHER ORGANIZATIONS

Item 6 – Recipients of Outside Financing — Report in this item all expenditures by your organization for research and development performed by other organizations and individuals. Expenditures for research and development performed by other than reporting organization, whether done in the United States or abroad, include payments made on contracts and grants awarded for outside research and development, for direct and overhead expenses, for the acquisition by recipients of such capital items as buildings, fixtures, and depreciable equipment, and for endowments. *Exclude* grants and contracts awarded but not disbursed during survey period, and contracts received by reporting organization and subcontracted to others. By type of recipient indicate in column (1) total extramural financial support for R&D; in column (2) indicate that portion of total extramural financial support for R&D which was expended for medical and health-related research and development, and in column (3) indicate that portion of total extramural financial support for R&D which was expended for other than medical and health-related research and development.

Item 6-10 – Within the United States — Report the amount of organization funds (see instructions to item 3-1 for definition of funds of the reporting organization) spent for research and development performed outside the organization by type of recipient within the United States.

Item 6-20 – Outside the United States — Include organization funds to foreign individuals engaged in research or development outside the United States, if they were not directly employed by your organization, and all organization funds to foreign and international organizations.

SECTION IV–SCIENTIFIC AND ENGINEERING PERSONNEL

Item 7 – Scientists and Engineers — Scientists and engineers for this survey are defined as all persons engaged in scientific or engineering work at a level which requires a knowledge equivalent at least to that acquired through completion of a four-year college course with a major in one of the following fields, regardless of whether they hold a college degree in the field: physical, life, or social sciences, engineering, mathematics, or psychology.

In column (1) report total number of such persons employed full-time or part-time by your organization in January 1967. Include all scientific and engineering personnel including all persons engaged in administrative and management activities requiring a scientific or engineering background. Also include all medical scientists who spend the greatest proportion of their time in clinical investigations, research, production, technical writing, and related fields. Exclude persons trained in science or engineering but currently employed in positions not requiring such training, and all personnel primarily engaged in activities other than scientific, technical, or social sciences such as the arts, humanities, law or religion.

In column (2) report the number of these scientists and engineers working full-time plus those working part-time in terms of full-time units, each unit according to the number of hours normally worked per week in the reporting organization. Exclude time spent by medical scientists in providing diagnostic and medical care to patients, the dispensing of drugs or services, etc.

In column (3) report the full-time equivalent number of scientists and engineers engaged in research and development, including those engaged in the management or administration of research and development. Report the number of these scientists and engineers engaged in medical and health-related research and development (see definition of medical and health-related research and development on page 2).

In column (5) include the full-time equivalent number of scientists and engineers engaged in other scientific and engineering activities including those engaged in the management or administration of activities other than research and development.

Item 8 – In column (1) report the total number of scientists and engineers employed full-time or part-time in January 1967, by highest earned degree. In columns (2) through (5) report the number of such personnel working full-time plus those working part-time in terms of full-time equivalents, by highest earned degree and function.

Item 8-1 – Ph.D. or Sc.D. degrees include all such earned degrees. Individuals holding both the Ph.D. (or Sc.D.) degree and a first-professional degree such as the M.D., should be included in this item.

Item 8-2 – Include individuals whose highest earned degrees are first-professional medical degrees that indicate the completion of the academic requirements based on programs that require at least two academic years of previous college work for entrance and require a total of at least six academic years of college work for completion. Specifically, include: first-professional degrees in Medicine (M.D.), Dentistry (D.D.S. or D.M.D.), Veterinary Medicine (D.V.M.), Chiropody or Podiatry (D.S.C. or D.P.), Optometry (O.D.) and Osteopathy (D.O.). Individuals holding both the Ph.D. (or Sc.D.) degree and a first-professional degree, such as the M.D., should be included in item 8-1 as mentioned above.

Item 8-3 – The Master's degrees include all second-level degrees above the Bachelor's degree and below the Ph.D. or Sc.D. (item 8-1) and M.D., D.D.S., and other first-professional medical degrees (item 8-2).

Item 8-4 – Report all individuals whose highest earned degree is the Bachelor's degree or a four-year first-professional degree, or who have the equivalent in experience, even if they have not earned such a degree.

Note that totals in item 8-5, columns 1 through 5 should be the same as totals in item 7, columns 1 through 5, respectively.

Item 9 – Technicians — Include all persons employed in positions which involve technical work at a level requiring knowledge of engineering, mathematics, physical science, life science, psychology, or social science comparable to that acquired through formal post-high school training (less than a bachelor's degree), such as that obtained at technical institutes and junior colleges or through equivalent on-the-job training or experience. Some typical job titles include laboratory technician or assistant, physical science aide, engineering aide, statistical aide, draftsman and computer programmer. Exclude craftsmen such as electricians, carpenters, machinists, etc.

* U.S. GOVERNMENT PRINTING OFFICE : 1969 O—352-147